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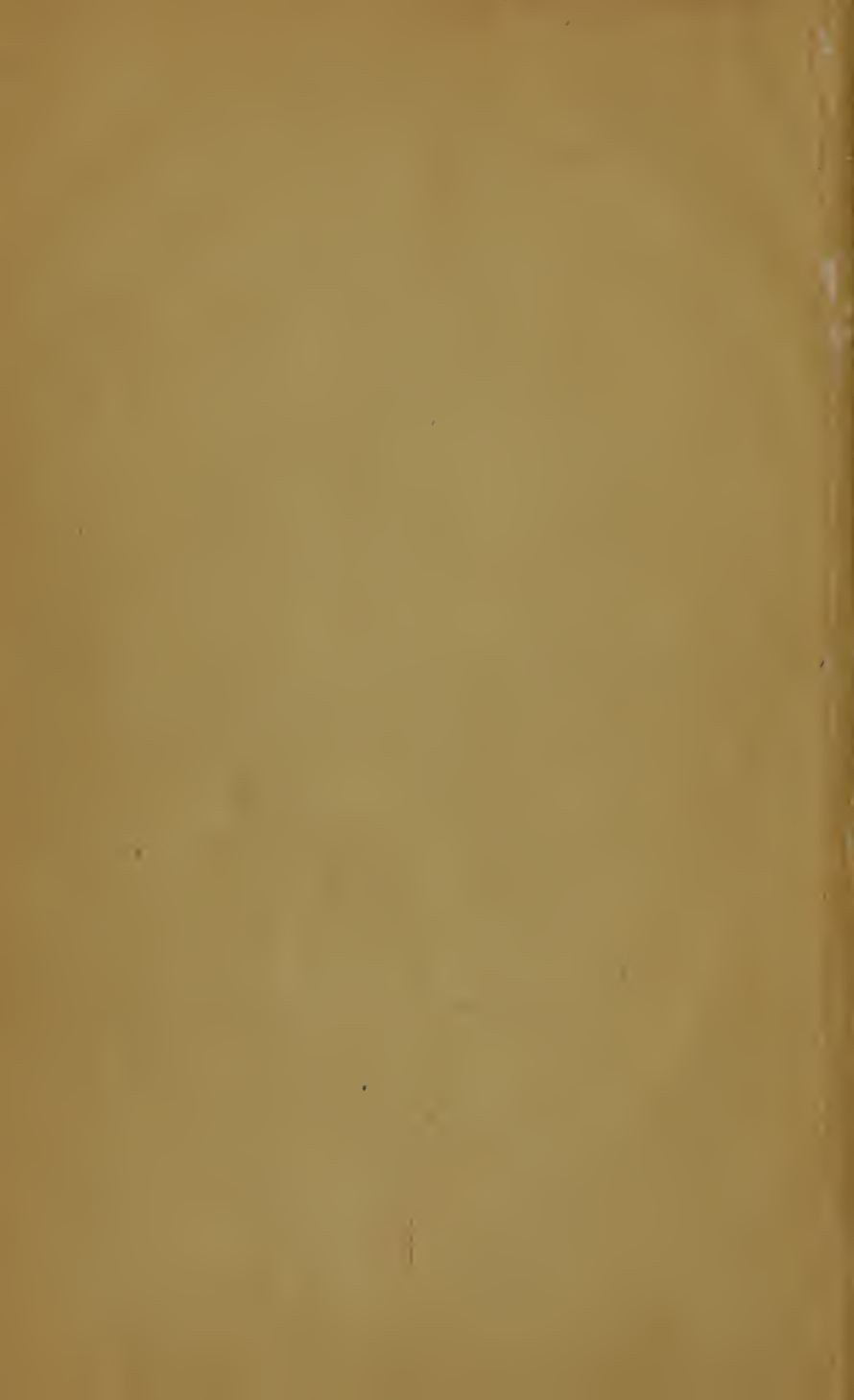
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Dr. John C. S. Monro

RESEARCHES AND OBSERVATIONS

1826.

ON THE USE OF

PHOSPHORUS,

IN THE TREATMENT OF

VARIOUS DISEASES.

BY

J. F. DANIEL LOBSTEIN, M. D.

OF THE FACULTY OF PARIS; LATE PHYSICIAN OF THE MILITARY HOSPITALS AND
ARMY OF FRANCE; CORRESPONDING MEMBER OF THE MEDICAL SOCIETIES
OF PARIS, BORDEAUX, TOULOUSE, AND MARSEILLES; MEMBER OF THE
LATIN AND MINERALOGICAL SOCIETY OF JENA; HONORARY MEM-
BER OF THE MEDICAL SOCIETIES OF PHILADELPHIA, OF MAS-
SACHUSETTS, OF MARYLAND, OF NEW ORLEANS, OF LEX-
INGTON, (KY.) OF PITTSBURG, (PA.) PHYSICIAN,
AND ACCOUCHEUR, &C.

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EASTERN DISTRICT OF PENNSYLVANIA—TO WIT:

:LS:

BE IT REMEMBERED, that on the sixteenth day of February, in the forty-ninth year of the Independence of the United States of America, A D. one thousand eight hundred and twenty five, J. F. DANIEL LOBSTEIN, M. D. of said District, hath deposited in this office, the title of a Book, the right whereof he claims as author, in the words following, to wit: "*Researches and Observations on the Use of Phosphorus, in the Treatment of Various Diseases.* By J. F. Daniel Lobstein, M. D. of the Faculty of Paris; late Physician of the Military Hospitals and Army of France; corresponding Member of the Medical Societies of Paris, Bordeaux, Toulouse, and Marseilles; Member of the Latin and Mineralogical Society of Jena; Honorary Member of the Medical Societies of Philadelphia, of Massachusetts, of Maryland, of New Orleans, of Lexington, (Ky.) of Pittsburg, (Pa.) Physician and Accoucheur.

In conformity to the act of the Congress of the United States, entitled "An act for the Encouragement of Learning, by securing the copies of Maps, Charts, and Books to the authors and proprietors of such copies, during the times therein mentioned," and also to the act entitled "An act supplementary to an Act, entitled, "An Act for the Encouragement of learning, by securing the copies of Maps, Charts, and Books to the authors and proprietors of such copies during the times therein mentioned," and extending the benefits thereof to the arts of Designing, Engraving, and Etching historical and other prints."

D. CALDWELL,

Clerk of the Eastern District of Pennsylvania.

TO

- TH. C. JAMES, M. D. *Professor of Midwifery, and of the Diseases of Women and Children, in the University of Pennsylvania.*
- N. CHAPMAN, M. D. *Professor of the Institutes and Practice of Physic, and Clinical Practice, in the University of Pennsylvania.*
- W. P. DEWEES, M. D. *Lecturer on Midwifery, Philadelphia.*
- TH. T. HEWSON, M. D. *Philadelphia.*
- JOHN EBERLE, M. D. *Professor of the Institutes and Practice of Physic and Midwifery, in the Jefferson Medical Faculty, established in Philadelphia.*
- G. M'CLELLAN, M. D. *Professor of Anatomy and Surgery in the Jefferson Medical Faculty.*
- SAMUEL MITCHELL, M. D. F. R. S. L. & E. *Professor of Botany and Materia Medica, in the University of New York, &c.*
- DAVID HOSSACK, M. D. F. R. S. L. & E. *Professor of the Institutes and Practice of Medicine in the University of New York, Physician of the New York Hospital, &c.*
- FELIX PASCALIS, M. D. *Censor of the State of New York.*
- JOHN W. FRANCIS, M. D. *Professor of Obstetrics and the Diseases of Women and Children, in the University of New York, &c.*
- J. C. WARREN, M. D. L. L. D. *Professor of Anatomy and Surgery, in the Medical School at Boston.*

CH. CALDWELL, M. D. *Professor of the Institutes and Practice of Physic, in the Transylvania University at Lexington, (Ky.)*

W. DONALDSON, M. D. L. L. D. *Baltimore.*

WITH RESPECTFUL CONSIDERATIONS,

THIS WORK IS DEDICATED,

BY THE AUTHOR.

GENTLEMEN,

I acknowledge my presumption in dedicating my work to distinguished men, whose fame is not confined to the United States, but extends throughout Europe, whence more important works than my imperfect essay, should claim the honor of a dedication to you. But knowing that the intolerant pride, which *too often* accompanies great and successful talents, forms no part of *your* character, I have ventured to take this liberty.

I am also induced to take this step, inasmuch as the remedy which forms the subject of my work is one but little known in this country, and against which some prejudice has been excited, and may still continue to oppose it. I wished, therefore, to place my observations in the hands of such *enlightened gentlemen*, upon whose candour I might depend for an unbiassed judgment of its merits and defects, and, certainly, *gentlemen*, I know of none more worthy of selection for this purpose than *yourselves*. It is then before *your tribunal* that I lay the results of my researches, which have heretofore been honored by the good opinion of many of the most distinguished scientific gentlemen of Europe.

As phosphorus has distinguished itself as a remedy by numerous instances of its extraordinary and no less happy effects, it will give me great pleasure to be the means of its introduction to the notice of the medical profession in the United States, and I have no doubt that, in other hands, it may become as useful to suffering humanity as it has proved itself, in numerous instances, in mine; and it would be flattering to me, *gentlemen*, to receive from *you* an opinion of the merits of my work, founded on that impartiality which I know *you* to possess.

Another reason, *gentlemen*, which has induced me to dedicate my work to *you*, is, that I have been for a long time *one* of the *great number* who venerate your talents and well earned distinction; and, during my residence in the United States, as I have enjoyed the honor of a personal knowledge, and a literary correspondence with some of you, I seize with pleasure an opportunity of a *public* expression of my high esteem.

I am, Gentlemen,

With sentiments of the highest respect,

Your most obedient humble Servant,

J. F. DANIEL LOBSTEIN, M. D.



L'impression de cette Ouvrage était déjà finie, lorsque j'ai reçu du *Grand Homme* dont s'honorent les *Deux Mondes*, le témoignage précieux et flatteur de ses bontés, que j'ai le plaisir de présenter à mes Lecteurs.

LE GÉNÉRAL LAFAYETTE,

AU

DOCTEUR J. F. DANIEL LOBSTEIN,

Médecin de la Faculté de Paris, et Médecin à Philadelphie.

Washington, 22 Février, 1825.

C'est avec beaucoup de reconnoissance, Monsieur, que j'ai reçu les anciens et les nouveaux témoignages d'estime et d'amitié que vous avez bien voulu me donner depuis mon retour aux Etats Unis, et je joins le souvenir du 28 Septembre à votre aimable lettre du 18 Janvier. Je serai très honoré de voir mon nom au nombre de vos Souscripteurs, et je vous envoie un ouvrage de mon ami Mr. Flourens qui vous intéressera surement. Agréez l'expression de ma considération distinguée, et de mon sincère attachement.

LAFAYETTE.

the present state of the world, and the
condition of the human mind, is such
that it is not possible to see the world
as it is, but only as it appears to be.
The world is a vast and complex system,
and the human mind is a small and
limited one. We are therefore always
seeing the world through a veil of
illusion.

It is true that we are always seeing
the world through a veil of illusion,
but it is also true that we are always
seeing the world through a veil of
truth. The world is a vast and complex
system, and the human mind is a small
and limited one. We are therefore
always seeing the world through a veil
of truth. The world is a vast and
complex system, and the human mind
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a vast and complex system, and the
human mind is a small and limited
one. We are therefore always seeing
the world through a veil of truth.

PREFACE.

Medicamina heroica in manu imperiti, sunt uti gladius in dextra furio-

LINN.

THE book which I published in Europe, in 1815, entitled "*Recherches et Observations sur le Phosphore*," having been well received, and highly spoken of, by the reviewers, I have been induced to give a translation of it in the English language.

Phosphorus may be considered as one of the most powerful of remedial agents. It is a heroic medicine, with whose powers we have but lately become acquainted. For some time, much doubt existed with regard to the propriety of introducing into the list of our internal remedies, a substance of such highly combustible properties as phosphorus; and *many* physicians were *so prejudiced* against it, as to desire that it might be *banished* from the *materia medica*.

I am aware, that in recommending an extraordinary remedy which is but little known, I render myself obnoxious to criticism, and many, secure in their own knowledge, may pronounce it to be *good for nothing*, and, consequently, refuse to read a work devoted to the exposition of its character, and say that they "*have already more books than they can read.*" It is indeed to be *regretted*, that a physician should be oppressed by a *multiplicity* of books, *insomuch* that he cannot read *them all!!* Is it a great library that makes the great physician? or, is it experience? But, notwithstanding the prejudices which I expect inevitably to encounter, I feel assured of ultimate success in establishing the character of the remedy in question, as truth must eventually be victorious. I, also, may become the subject of criticism, and so far from shrinking from this, I only desire that the author may only be judged by those who have *read* his work.

The internal exhibition of phosphorus, undoubtedly requires much judgment and circumspection. In ignorant and unskilful hands, it may be productive of the most unhappy effects. But should it, on this account, be entirely proscribed? Shall we not take advantage of its good effects? Let those who are not acquainted with the circumstances proper

to its exhibition, abstain from the use of it.—*Abstine si methodum nescis.*

Experience has sufficiently proved, that phosphorus, in the hands of the intelligent physician, is a remedy of the greatest value, and one that has produced effects almost miraculous. For a long time I hesitated to employ it in my practice. It was not until I had read and meditated on the observations of others, who had used it, that I ventured to prescribe it. My experiments were so successful that I am induced to make them public.

In treating of a remedy of such great importance to suffering humanity, I am sensible of the propriety of adding to my own experience that of others who have used it. The plan which I have adopted, therefore, is, First, to give a history of the discovery and chemical properties of phosphorus:—Secondly, the experiments which have been made with it by sundry eminent physicians, and, Lastly, my own experience in its remedial properties: and, in setting forth its valuable characteristics, it is not intended to conceal its dangerous properties. In this way, not only a general knowledge of phosphorus, as a remedy, may be promulgated, but, by a comparison of the various forms and doses in which it has been exhibited in various cases, the physician can be particularly informed of the proper method

of using it, and of the cases in which it is most likely to be serviceable.

My sole object in the present work, is to serve the cause of humanity, by making known, more extensively, in the western hemisphere, the character of a medicine which has not yet received the sanction of universal experience in this country; and if my efforts may be the means of attracting the attention of the profession, and induce others to repeat and establish the truth of the experiments which I have related, and by these means one individual shall be saved from threatened destruction, I shall feel myself amply rewarded for my labour.

I am sensible that my work may be found defective in some particulars, and I will receive, with pleasure, those criticisms which are founded in candour and judgment, while I shall not trouble myself to reply to the cavils of ignorance and prejudice.

The circumstance of my work being dedicated to a large number of eminent physicians, may also elicit some remarks. My reasons for this will be found in my dedication.

It is also my duty to express my thanks to a large number of distinguished physicians, and other respectable persons, who have honored me with their subscriptions to my work.

It cannot but be flattering to the author to see among his patrons the name of so eminent a man as *the Honorable Thomas Jefferson*, ex-president of the United States, *a patron of the arts and sciences*, and I will always preserve the letters which he has done me the honor of addressing to me, as a precious treasure. I entertain a sincere wish for his health and happiness, and for the prosperity of the government of the United States.

THE AUTHOR.



RESEARCHES AND OBSERVATIONS

ON

THE USE OF

PHOSPHORUS.

HISTORICAL ACCOUNT OF THE DISCOVERY OF PHOSPHORUS.

ACCORDING to Leibnitz, it was in the year 1677 that an alchemist, of Hamburg, named Brandt, in the distillation of urine, found in his recipient a shining substance, which he called phosphorus, the discovery of which he kept secret. Kunkel, a Saxon chemist, having gained a knowledge of this circumstance, imparted it to his friend Kraft. The latter departed immediately for Hamburg, and purchased the secret from Brandt, under the condition that Kunkel should not be instructed in the process. Kraft exhibited the phos-

phorus for money, in Hanover, and in England, where he made it known to Boyle, and to the Society of Science, in London. Kunkel, irritated by this conduct of Kraft, made every effort to discover the process of obtaining phosphorus. Knowing that Brandt had been experimenting with urine, he directed his attention to this substance, and with success.

The discovery of phosphorus was, therefore, attributed to Kunkel by the chemists, who called it "Kunkel's Phosphorus."

Boyle also claimed the right of the discovery of phosphorus, which he called *noctuluca ærea*. His process for obtaining it may be found in the "Philosophical Transactions" of 1680.

A number of chemists published, about this time, their various processes for obtaining this substance, which were ultimately brought to perfection by Hellot, Rouelle, and Margraaf. This latter chemist first exposed the principle which immediately contributed to the existence of phosphorus in the urine. He demonstrated that it existed in the form of an acid, until then unknown, from which it was obtained by distillation with combustible substances.* Thus, the rational pro-

* Charcoal is the substance wholly employed in this process. At a high temperature, it takes the oxygen from the phosphoric acid, and leaves the pure phosphorus to be evaporated, and afterwards condensed in the recipient.

cess for obtaining phosphorus was the decomposition of the fusible salts—the phosphates of soda and ammonia contained in this fluid.

This decomposition is also effected, according to Margraaf, by the muriate of lead: there results a phosphate of lead which yields phosphorus. But this process is tedious, difficult, and exceedingly disagreeable, on account of the foetid exhalation from the putrid urine. Giobert, of the academy of Turin, has made known another process for obtaining phosphorus from urine with greater facility: this is published in the *Annales de Chimie*, tom. xii.

In 1774, Gahn and Scheele, of Sweden, made the important discovery of the existence of phosphate of lime in the bones of animals, and they invented an easy process for extracting the phosphorus. They decomposed the phosphate of lime by sulphuric acid, and evaporated the liquor containing the phosphoric acid to dryness. The dry acid was then mixed with powdered charcoal and distilled.

This process was perfected by Fourcroy and Vauquelin;* also, by Nicholas and Pelletier,† who published

* *Mém. de l'Institut*, tom. ii. p. 282.

† *Souv. de Physique*, tom. xii. p. 449.

their valuable researches upon the subject of obtaining phosphorus from its combinations.

Traces of phosphorus have been observed in many mineral and vegetable substances. The seeds of the cernea, of mustard, of garden cress, and of wheat, give, according to Margraaf,* this substance by distillation, but it is much more abundant in animal matter.

It has been found in the excrementitious matter, in the blood, in flesh, hair, milk, in the nails, horns, cartilages, &c. The urine and bones, however, yield it in the greatest quantity. Bones are now generally, if not exclusively, employed by chemists for obtaining phosphorus. This is sometimes spontaneously formed in the body: there are examples of men voiding phosphorescent urine. Dr. Jurine, of Geneva, has recently published a curious fact of this nature. He adds, that professor Pictet has also, in a few instances, observed this occurrence.†

* Margraaf, Chem. Schriften, tom. ii. p. 75. §. 34, 35.

† Journ. Gen. de Médecine, par Sedillot, Sept. 1813. tom. xlvii. p. 48.

PHYSICAL AND CHEMICAL PROPERTIES OF PHOSPHORUS.

PHOSPHORUS is at present considered by the chemists as a simple combustible, but some recent experiments seem to indicate the presence of hydrogen and carbon in this substance. However this may be, phosphorus, when pure, presents always the same characteristics. It is solid, semi-transparent, of a yellowish colour, and presents a luminous appearance in the dark; its consistence is analogous to that of wax. It is easily cut with a knife, but it is not susceptible of being reduced to powder by trituration: it may be broken, when its fracture resembles that of glass. Its specific gravity is 1,770. It has an acid taste and a strong alliaceous odour. It is luminous in the dark. Exposed to the air, at a common temperature, a whitish vapour or smoke arises from it, which is luminous in the dark. This vapour is

more abundant as the temperature of the atmosphere in which it is formed is higher. It is a slow combustion caused by the oxygen of the atmosphere. It is used on this account in endiometry.

Phosphorus melts in warm water at the temperature of 32° R.

When phosphorus is melted and exposed to the action of oxygen gas, it immediately undergoes combustion, and spreads a very brilliant light. It is capable of being inflamed in common air at the temperature of 40° R.

A sudden blow, friction, and even compression will induce the active combustion of phosphorus. It is necessary therefore to be very cautious in using phosphorus, and for the same reason it should be always kept under water.

When burned, phosphorus throws off a large quantity of white and suffocating vapour, which consists of *phosphorus* acid, if the combustion takes place in atmospheric air, and of *phosphoric* acid, if in pure oxygen.

Phosphorus combines with hydrogen and forms a gas, called phosphoretted hydrogen, which becomes luminous by simple contact with the atmospheric air: it unites with sulphur in different proportions, with carbon, the metals, &c.

Water does not dissolve phosphorus, but it is worthy of remark, that this fluid, when for a long time in contact with phosphorus, is decomposed, and becomes sour, and the phosphorus becomes covered with a white opaque crust, which is an oxide of phosphorus.

Liquid potash and ammonia dissolve phosphorus with the disengagement of phosphoretted hydrogen.*

The mineral acids exert an action on phosphorus more or less strong, according to their affinity for oxygen.

Phosphorus is dissolved with facility in the fixed and volatile oils, and communicates to them the property of luminousness in the dark. This is more particularly the case with regard to the oil of the gilly-flower.

Mr. Baring apothecary at Cassel, has not been able to dissolve more than 1,50 grains of phosphorus in $\frac{3}{4}$ of the oil of almonds, with the assistance of water bath.

Mr. Kruger, on the contrary, asserts that, with the assistance of a proper degree of heat, twenty-four grains may be dissolved, and without decomposition, upon cooling, in two hundred and seventy-two grains of recently prepared almond oil.†

* Klapproth, Chem. Wörterbuch, tom. iv.

† Doerffurt Neues deutsches Apotheker buch, II Theil, p. 1577.

Mr. Hecht, professor of Chemistry and Pharmacy, at Strasburg, in France, has made many experiments on the solubility of phosphorus in the oils. The details of them may be found in a memoir of professor Lauth, on the internal use of phosphorus.*

The result of these experiments is, that four grains of phosphorus may be dissolved in one ounce of the oil of linseed, of olives, or sweet almonds, if the proper degree of heat is preserved. These solutions are not permanent, by an absorption of oxygen from the atmosphere they become changed to a kind of phosphoric soap.

According to Mr. Schmitt, one ounce of oil of turpentine, or rosemary, dissolves eight grains of phosphorus. Phosphorus is very little soluble in alcohol, but it is perfectly soluble in ether: it should be observed, however, that the ether should be perfectly rectified by muriate of lime, before it can become a complete solvent of phosphorus.

The difference of authors with respect to the quantity of phosphorus which may be dissolved in ether, arises, undoubtedly, from the different degrees of excellence of this menstruum.

According to Pelletier,† one ounce of ether dissolves

* Mem. de la Soc. des Sciences, Agricult. et Arts, de Strasbourg, t. II. p. 391.

† Recueil Periodique, t. IX, p. 397.

six grains of phosphorus; and the solution is not completed in less than three or four days.

Bouttatz,* on the contrary, says, that fifteen grains of phosphorus are soluble in two ounces of the purest ether, if care is taken to place the vessel in a water bath, or to cover it with a piece of bladder, in which there is a small perforation through which the vapour of the ether may pass in sufficient quantity to prevent the bursting of the vessel.

Finally, Mr. Hecht has found that one grain of phosphorus is soluble in two drachms of ether.† Phosphoric ether, if it is well prepared, possesses the odour and properties of phosphorus. Exposed to the air in the dark it throws off a luminous vapour; dropped into boiling water it immediately inflames. The phosphoric ether may be preserved for a long time, if the phosphorus is dissolved in the oil of gilliflower, previously to the addition of the ether.‡

Phosphoric ether recently prepared is not decomposed by cold water, because it floats on this fluid; but when diluted with alcohol and ether mixed with water, it acquires a milky appearance, and the phosphorus is separated in the form of an extremely fine powder,§ (or is precipitated.)

* *Ueber den Phosphor.* p. 82.

† *Mém. cité*, p. 410.

‡ *Tromsdorf Journ.* t. x. 1. st. p. 134.

§ *Scherer's Allgen. Journ. der Chemie*, II. 652.

METHOD OF ADMINISTERING PHOSPHORUS.

If phosphorus has been stigmatized as a poison which had been productive of deplorable effects, it is because it has been injudiciously administered, or given in excessive doses.

This is an evil to which the characters of all active medicines are liable. Indeed, the most violent poisons become the most excellent remedies, when properly exhibited.

Phosphorus has been given in different forms by practitioners of medicine, some have given it in the form of pills, others in a conserve, an electuary, &c. Mentz prefers molasses as its vehicle; Hartman, the elder root; Weickhard, conserve of roses and honey; Hufeland has prescribed it in an emulsion of gum arabic, almond sirup, and a few drops of Hoffman's liquor; Alphonse

le Roi, dans un looch. This philosopher invented a process for dividing phosphorus without inflaming it: it is as follows: A piece of it is thrown into hot water, in which it melts, the phial is then violently shaken, by which means the phosphorus is divided into innumerable small globules, like oil; cold water is then added, which renders the phosphorus again solid, and it is precipitated in the form of a powder. Two grains of the powder is given for a dose, mixed with sugar, a drop or two of oil, and a small quantity of the yolk of an egg; these are triturated together in a glass mortar, previously made cold, and kept, during the operation, in cold water, or ice. But in these processes the phosphorus is not perfectly dissolved, it is only suspended in a manner which renders its separation easy.

It is wonderful that Crantz has advised the exhibition of phosphorus in the solid form; the most serious accidents may arise from this practice.

Some physicians are in the habit of giving phosphorus dissolved in fixed or volatile oils; but this mode is disagreeable to the taste of the patient, and the compound is likely to be rejected by the stomach; it is probable that it is decomposed, the gastric juices not being able to dissolve the oil.

The form which appears to be the most advantageous for the exhibition of phosphorus, is its solution in sul-

phuric ether: it is generally preferred by modern authors. Conradi, Boutlatz, Gaultier-Claubry, Lœbenstein-Lœbel, and others, have derived from it the greatest advantages. I have myself employed it successfully, as will appear in the course of this work. It is the only form in which phosphorus can be employed without danger; because, from a state of causticity it has been reduced to a stimulating and analeptic substance.

I cannot but admire the plan of Lœbenstein-Lœbel, of adding to phosphoric ether a small quantity of distilled aromatic oil. The remedy thus becomes more active, and operates more regularly; the solution of the caustic is more perfect. To prevent its decomposition, it should be given in a little sirup, or on a lump of sugar.

The dose is not an object of less importance to be considered; how perfect soever may be the form of a medicine, if we transcend the proper dose, evil consequences may ensue. Neither should we be too timid, so as to prescribe it in a dose too feeble to produce the desired effect. Experience has proved, that in the majority of cases, one grain of phosphorus is a sufficient quantity to be taken in twenty-four hours.

Hufeland* remarks, that it cannot be given without

* Journ. der Pract. Arzneyw. t. VII. 3 St. p. 115.

danger, in larger quantities than two grains in twenty-four hours; stronger doses having produced a burning sensation in the stomach, rendering it necessary to relinquish the remedy or diminish its quantity. After this what shall we think of Vater,* who pretends to have swallowed no less than a half scruple of phosphorus in one dose, in honey! Nor is it less astonishing that Desbois de Rochefort† recommends this substance in doses of four, six and eight grains, and that others state that they have given it in doses of two or three grains many times through the day. It may frequently happen that the dose prescribed by the physician may not be contained in the vehicle, which happened in a case reported by Bouttatz.‡ In the clinical hospital of a celebrated university of Germany, a distinguished Physician prescribed phosphorus dissolved in sulphuric ether. At his visit he showed to his students the vessel in which the phosphorus had been dissolved—one of them observed that the quantity of phosphorus was too great for that of the ether, and that the solution appeared to him to be extraordinarily clear, whereas, he had always remarked that this solution was somewhat milky. The

* Dans la dissert. de Mentz, in *Hall*, disput. t. VII.

† Course Element de Mat. Med. t. II.

‡ Ouv. cité, p. 76.

physician, relying on the skill of the apothecary, maintained that the phosphoric ether could not differ in appearance from the present specimen. Meanwhile, the student, not having his doubts removed by the assertion of the physician, went to the apothecary to be informed of the manner in which the solution had been prepared. The apothecary, who, as too frequently is the case, had not much respect for pharmaceutical knowledge, called his assistant and demanded of him the process by which the solution had been formed, who very innocently replied that he had put a piece of phosphorus of the prescribed weight into the ether, and that he had taken it out again when the medicine was sent for! How are they able to arrive at certain results, who are liable to errors so gross?

A general rule to be observed in prescribing phosphorus, is to commence with small doses, and to augment or diminish them as circumstances may dictate; and to discontinue its exhibition in those cases in which it produces excessive burning in the stomach, or vomiting.

Professor Lœbenstein-Lœbel thinks that in cold and rainy seasons a larger dose of phosphorus can be borne, than when the air is dry and pure,* also that this me-

* Horn's Archiv, 1810, 2 Band, p. 89.

dicine should never be given to a patient fasting. He has not witnessed any good effects from it, unless the patient had eaten food an hour previous to its exhibition. The professor has also made a number of interesting observations concerning the regimen proper to be followed by those who take phosphorus.

Highly seasoned food, acid drinks and beer, are not good. To satisfy the thirst, salep and other mucilaginous drinks, mixed with good wine, may be used. The patient should also abstain from drinking immediately after taking the phosphorus.

In acute diseases, or in those cases in which there is but little appetite, aromatic soups, with nutmeg, decoction of vermicelli, sago, &c. may be used; and in chronic cases, when the digestion is unimpaired, veal, beef, mutton, poultry, &c. are the most proper aliments; also leguminous vegetables, such as carrots, parsnips, &c. Professor Lœbenstein-Lœbel has also observed, that the use of cabbage, radishes, and vegetables of this kind are incompatible with the use of phosphorus. These indigestible vegetables occasion a sensation of fullness about the præcordia, accompanied by an intolerable anxiety and heartburn; and, often, vomiting and purging. Food should not be taken too cold or too warm. The patient ought to use neither milk nor fruits.

If the patient is obliged to go out, it is very necessary that he should avoid the effects of cold by being warmly clad: for cold, however gradually applied, may be productive of vertigo and diarrhœa, and cause a return of the disease in those who are convalescent. The professor recommends the latter to wear flannel.

The warm bath is very useful to those who use phosphorus. This author has often employed phosphorus for two months without any evident effect, until he has had recourse to the warm bath, when the most striking change was observed. This was particularly the case in nervous diseases. The patient should not remain in the bath for more than a quarter of an hour.

EFFECTS OF PHOSPHORUS ON THE ANIMAL ECONOMY.

MANY physicians have undertaken to prove the effects of phosphorus on their own persons. Alphonse Le Roy* has taken as much as three grains in treacle. He found himself very much disordered during two hours. He drank, frequently, small doses of cold water, and in a few hours the uneasiness went off. His urine was very red; on the next day his strength was doubled, and his venereal appetite was insupportable. Pelletier observed the same effect in a drake, who, with several ducks, drank of some water, from a copper vessel in which phosphorus had been kept. This water poisoned the animals; but the male was provoked to cover the females to such an inordinate degree, that the poor fellow was the first to die.†

* Mem. de la Société, méd. d'emulation de Paris, t. I. p. 171.

† Ibid.

Doctor Bouttatz having dissolved four grains of phosphorus in a half ounce of ether, took twenty drops of the solution every four hours. The first dose occasioned some nausea, which disappeared on his drinking some cold water. The second created a great appetite—the pulse was excited, and the natural temperature augmented, and he felt an universal excitement. He continued to take it until evening, at which time he was able to take more than a grain. No inconvenience resulted; on the contrary, he was sensible of an augmentation of his strength and a stimulation of the genital organs. The secretion of the urine was also much augmented.

Weickard has taken phosphorus in the dose of from two to three grains without inconvenience.

In acute diseases, as typhus, nervous fevers, &c. the effects of phosphorus are manifest sometimes in the course of about four hours, at others only after twenty-four hours. The temperature of the body is restored, perspiration produced, the pulse relieved, the urine is passed in greater quantities, and contains an unusual quantity of sediment; the bowels, if they have been constipated, become relaxed;* the stools have a sulphurous odour, and are luminous in the dark: delirium ceases, and the patient recovers his mental powers;

* Ouv. cité, p. 99.

gentle sleep repairs his strength; his tongue becomes clean, the appetite returns, and in fine, joy seems depicted on all his person, &c.

These phenomenon are differently manifested in individuals of different ages, also in different diseases. They are less observable in chronic diseases.

Phosphorus is a remedy which extends its action over every part of the animal economy, but it is in the nervous system that it more particularly demonstrates its power. Its action is very prompt, intense, but not durable. It is one of the most powerful of the volatile stimuli, and is particularly calculated to revive failing vitality.

It is proper, however, to remark, that its salutary effects can only be obtained by attention to the rule, previously mentioned, namely; that it should be perfectly dissolved in the vehicle in which it is given. Under other circumstances, if it is given in mass it acts as a caustic, as a decided poison, whose impression on the nerves of the stomach and intestines, causes the most acute pain, heat and convulsions, trembling, weakness, and death. These consequences are violent in proportion to the quantity of the phosphorus given.

In some instances this medicine has given rise to scirrhus of the stomach and all its consequent evils.

Hufeland has known many persons, who having frequently taken from quacks, large doses of phosphorus, have been afflicted for a long time, with cardialgia, indigestion, vomiting, constipation, &c. until they, finally, became the victims of morasmus, and sunk under hectic fever. After death considerable scirrosity of the stomach was observed. Professor Lobelstein Lœbel, to convince himself of the bad effects resulting from the exhibition of phosphorus in substance, gave only the eighth of a grain to a man who had been for eight years affected with epilepsy consequent to affright ; and twenty-five minutes after taking this dose, the patient felt an extraordinary heat in the stomach, which was succeeded by great thirst, anxiety, and convulsions of the muscles of the face. He complained of chillness, the extremities became cold, the eyes glassy, the lips pale, the pulse feeble, and the strength diminished, until death terminated the scene.

We will never differ in our experience, I think, of the effects of medicines upon the human subject, if we are well acquainted with the substances which we employ. Are not the experiments which have been made with phosphorus on living animals conclusive? Have they not demonstrated that phospho-

rus introduced into the stomach on the intestines of animals, undergoes a combustion, and produces an unnatural heat in proportion to the quantity swallowed, dissolved and burned?

Doctor Bouttatz* has made some interesting experiments on various animals, with phosphorus; particularly on chickens, pigeons, cats and guinea-pigs. We give the details of some experiments on the latter subjects. The Doctor triturated a grain and a half of phosphorus with the yolk of an egg, some sugar, and two ounces of water. He mixed a small portion of this with bread and meat and gave it to the two cats, one of the cats eat of it, the other not being hungry, smelled it several times but would not eat it. The first cat vomited, an hour afterwards, all that she had eaten, but again ate what she had thrown up, as is the practice of these animals. Her cries indicated much uneasiness; she vomited a second time and was seized with violent convulsions; she ran to the right and left, and frequently jumped half a foot high. By ten o'clock at night all these symptoms were exaggerated. The convulsions were so violent that the animal rolled about and extended her paws again, she would throw herself on her back, extending her legs upwards, and remaining sometime in this position she would cry piteously. It was impossible to make

* Ouv. cité p. 86.

her drink. After about eleven hours these symptoms subsided, so that hopes were entertained of her perfect recovery, but she eventually died.

On dissection her stomach was found empty and somewhat inflamed; the inflammation was more strongly marked in the duodenum, and the gall-bladder, the lower intestines were tumefied and were phorescent in the dark.

Of six dogs to whom Professor Læbenstein-Læbel administered phosphorus, he was able to save but two by pouring oil down their throats. Dissections of the others showed distinct traces of gangrene of the stomach; this riscus was hardened, and presented numerous brown spots, with black specks in the middle, which when rubbed with the fingers gave out a disagreeable odour resembling burned horn or sulphur. They were not frangible, but hard like horn.

Dr. Giulio, Professor of medicine at Turin, and also the Doctors Brera and Mugetti, have made analogous experiments on dogs, young cocks and other animals. The vapour of phosphorus, and also the simple contact of the solid substance with the fauces proved fatal to frogs.*

We may also find in many authors examples of the unhappy effects of phosphorus, even though the

* Alibert, nouv. elem. de Therap. et de Mat. Med. t. 1. p. 23.

substance may have been given with the utmost caution.

We believe it was Weickard who, after the application of various remedies, without success, in the person of a Jew afflicted with palsy of the tongue and extremities, and apoplexy, prescribed phosphorus in the dose of two grains in conserve of roses and honey. He proposed to augment this dose gradually, when in the night of the third day of its exhibition the patient was seized with a vomiting, and appeared extremely feeble, his pulse was small and frequent; these circumstances interrupted the use of the phosphorus. Mucilaginous and refreshing drinks were given, and a blister applied to the patient, but without effect; he was seized with a pain in the lower belly, and died on the fourth day. Gangrenous spots appeared on his thigh.

The same author records the case of a man who, having heard of the powers of phosphorus as a remedy, resolved to try its virtue in correcting a strong propensity to sleep with which he was afflicted. He had scarcely commenced the experiment when he was seized with apoplexy. He had taken at that time three grains of phosphorus dissolved in oil, the dose repeated night and morning. This treatment had at first a good effect. The patient was, for several days, able to walk about his chamber, when he was sudden-

ly seized with nausea and febrile symptoms, he vomited, but obtained no relief to his feelings. He experienced a violent pain in the belly. Dr. Weickard was called and found him in a profuse perspiration, with his eyes yellow. He prescribed for him milk, cream of tartar, bathing, &c. Being obliged to absent himself for several days, he was unable to see the patient, who growing worse, called in another physician. He was then treated with musk and other stimuli; but the prostration of his strength continued, and he died. Can we doubt the existence, in this case, of inflammation of the stomach occasioned by the phosphorus, especially as the quantity used (six grains per diem) was very great?

Brera reports a case of hemiplegia in which he prescribed phosphorus after a course of other practice. He gave it in the dose of a grain, with gum arabic and yolk of egg, in three ounces of cinnamon-water: this was given in two doses, at an interval of two hours. Towards evening the patient was much better and felt a formication in the paralyzed members; but complained of a sense of weight in the stomach. The next day she repeated the remedy, and the motion of the lower extremity was re-established. She rose and walked in the chamber, but the oppression at the stomach continued, with a desire to vomit. The formication in the paralyzed arm was very strong, and

the pulse frequent. The patient acquired a great repugnance to the phosphorus, and, after three days, discontinued the use of it. It was then used in glysters in double the quantity. She vomited many times in the day, and complained of pain in the belly, and a burning sensation in the stomach and intestines; her strength failed, the pulse became feeble, her face pallid, and she died notwithstanding all the assistance which could be rendered.

On dissection her stomach and intestines were found to be much distended, and emitted through a small opening which was made, a whitish vapour of an aliaceous odour, and which was inflamed by a candle. No traces of inflammation were observed in the stomach; the small intestines exhibited a few reddish coloured spots, indicative of slight inflammation. In the large intestines was found the solution which had been injected, it was unchanged.

Mr. Lauth, a Professor of the faculty of medicine at Strasburg, in a memoir concerning the internal use of phosphorus, has also recorded an instance of a female who became a victim of this substance. His relation of the case is so replete with interest that I cannot refrain from inserting it here.

“ A woman aged fifty-two, was afflicted for a year, with pain in the limbs and weakness, to such a degree that she was scarcely able to walk. She took,

during three days, a spoonful of phosphoric emulsion, containing one-fourth of a grain of phosphorus, morning and evening. On the fourth day she took three doses, and shortly after she vomited an insipid water, and complained of violent pain in the stomach. The use of the phosphorus was now suspended, and mucilaginous drinks prescribed, but without success in alleviating the pain. It was felt throughout all the belly, but was more particularly intense in the stomach. The patient continued to vomit greenish matter, and finally black; her stools were of the same nature. The belly became tympanitic and extremely sensitive: the fever, which commenced with the pain in the stomach, was accompanied by a small and very frequent pulse: all the symptoms indicated inflammation of the stomach and intestines, with which the patient died after three days suffering."

Professor Lauth opened the body on the next day. The lungs presented nothing remarkable. The epiploon, which was very large and fatty, covered the smaller part of the intestines. The exterior of the stomach presented no sign of disease, but all the small intestines were livid and black, and the mesentery exhibited signs of excessive inflammation. He opened the œsophagus, the stomach and the intestines; the internal surface of the œsophagus was inflamed, the stomach and small intestines were filled with a black flu-

id, and their internal surface was of a reddish colour. Besides this general inflammation, the internal surface of the cordia was studded with innumerable points, as if it had been burned ; the large intestines were in a natural condition.

On the 8th Brumaire, the day of the dissection, Mr. Lauth preserved specimens of the cardia and intestines, in brandy, and on the 3d Germinal, they were examined, the appearances of inflammation were no longer visible in the intestine, but the cardia still presented the above mentioned appearance.

The melancholy result of their observations is, that phosphorus is separated in the stomach from the vehicle which held it in suspension. Mr. Lauth is convinced of this, and also that he has never seen a true solution of phosphorus. To prove this, he left for some time at rest, an emulsion of phosphorus, and a yellow powder was deposited on the bottom of the phial.

CLINICAL OBSERVATIONS, FAVOURABLE TO THE CHARACTER OF PHOSPHORUS AS A REMEDY.

Phosphorus was scarcely known before it was employed in medicine. Kunkle used it in the composition of certain pills, for the cure of various chronic disorders.

In 1733, Kramer, physician to the Elector of Saxony, employed with great success a preparation of phosphorus, in epilepsies, insanity and malignant fevers, which he pretended to have cured as by magic.

In 1751, Mentz published some observations on the happy effects of phosphorus. He was followed by Barchewitz, Hartman, Wolf, and others, who established the efficacy of this remedy.

But it has been principally in latter times that the phosphorus has attracted the attention of a large number of distinguished physicians, who have made it an object of their particular attention.

The memoirs that have been published in favour of phosphorus, are dispersed throughout numerous journals, dissertations, &c. And I flatter myself that I am usefully employed in collecting the most interesting of these observations in one body. The authors which I have chosen are the following:—Alphonse Le Roy, Weickard, Conradi, Hufeland, Gaultier Claubray, Lentin, Luitzelberger, Handel, Remer, and Læbenstein-Læbel.

ALPHONSE LE ROY.

This Professor has made a large number of interesting experiments with phosphorus. In 1779 he effected the cure of a young man, afflicted with a violent and irregular fever. He cites also the case of a woman who was relieved from a putrid fever by means of phosphorus, but who subsequently became a victim to her own imprudence. It is remarkable in this case that the whole body, after death, was luminous. In putrid and malignant fevers, the same authors has also given the phosphoric acid in a drink, prepared as lemonade, and he prefers this to the sulphuric acid. He reports also the case of an old man, reduced to a state of extreme debility, in whom the lamp of life, so to speak, appeared to be relighted, by this agent.

Some water, in which phosphorus had been kept, mixed with a little syrup, in one instance revived the strength of an expiring female, and supported her life for fifteen days. A drink composed of phosphoric acid and honey proved of great utility to a man who laboured under all the symptoms of dorsal consumption consequent to excess in venereal pleasures. Finally, in rheumatic gouts, Professor Alphonse Le Roy, states that he has frequently employed pills containing one eighth of a grain of phosphorus.

WEICKARD.

Weickard speaks of an individual whom he relieved by the use of phosphorus from apoplectic symptoms, which were consequent to habitual head-ache. The following are the details of this case:

A very robust man, very much devoted to his business, aged seventy years, had been subject for ten years to head-ache, giddiness, and a ringing in the ears. He vainly sought relief from repeated bleeding, but this only appeared to increase his disorder. He finally consulted a physician, who prescribed for him musk and spirit of hartshorn; these remedies procured for him some relief. In about a year his disorder returned, accompanied by vertigo and continual somnolency. He spoke with difficulty; he was stupid and insensible, and in a word exhibited all the signs

of approaching apoplexy. Previously to the arrival of the physician a surgeon had bled him. His disorder was increased, and he fell into a state of extreme debility. The physician immediately prescribed two grains of phosphorus dissolved in oil. The success of this remedy was such, that the patient was able, towards evening, to walk about his chamber. All the symptoms of his disorder were diminished in violence. During the following night he had another attack, which was again suppressed by the phosphorus. On the next day also he had another attack, which was, like the preceding, removed by the same means. The patient recovered liveliness and pursued his accustomed business.

During the exhibition of the phosphorus the patient experienced a profuse diuresis, insomuch that once he passed his urine involuntarily.

In another instance Dr. Weickard was not so successful.

CONRADT.

This gentleman, a Physician of Nordheim, has been particularly happy in his examination of the effects of phosphorus, and in establishing the quantity in which it may be exhibited. His experience goes far to prove the efficacy of this remedy in cases of ex-

treme debility. I give only those instances of his success, which are particularly worthy of attention.

I.

A man aged seventy one years was afflicted for fifteen days with a fever, whom Dr. Conradi treated with tartar emetic, in small doses, sal amoniac, and various laxatives; he became very much enfebled and exhausted. and indeed his appearance was altogether very alarming. He was much afflicted with hiccough and swallowed with great difficulty; and the fluid which he swallowed could distinctly be heard falling into the stomach. His breathing was sterturous, no expectoration, somnolence, with small and frequent pulse and cold extremities; he had cold sweats, and his tongue was red and dry, and his eyes dull. The symptoms left but little hope of prolonging the life of the old man. He was resigned to death, and his family was prepared for the event. The interference of the physician appeared to be absolutely superfluous. Willow bark in decoction, with camphor and cinchona, had been used for several days without success. On the eleventh of February, the twentieth day of the duration of the disease, and the sixteenth of the extreme prostration, the physician prescribed four grains of phosphorus dissolved in a drachm of ether; six drops of which were to be taken every two hours.

After the third dose the hiccough ceased and the patient could swallow with facility. The next day he found himself much better : his skin was covered with moisture, the pulse was relieved, and expectoration was re-established. The expectorated matter was thick and tenaceous, and the urine, which flowed abundantly, was viscid.

The remedy was only continued for three hours, and in about forty-eight hours the patient was out of danger. The treatment of this case was finished with the exhibition of decoction of willow bark.

“Never,” says the author, “have I seen a patient relieved under similar circumstances.”

II.

A woman of sixty years of age was attacked by a violent pleurisy. After having combatted the fever for fifteen days with nitre, sal amoniac and emetic tartar in small doses, blood-letting, embrocations of volatile liniment and blisters, the patient found himself in an expiring state. The prostration of his strength was extreme, with hectic fever and a small and frequent pulse. The face and extremities were cold, and the patient was very restless in bed. His respiration was short and difficult, his face hippocratic, the heaving dull, with sleepiness, and in a word, he was in an agony.

Doctor Conradi prescribed three grains of phosphorus dissolved in an ounce of oil, with half an ounce of syrup of almonds; a table spoonful to be taken every two or three hours. During the first twenty-four hours the extremities became warm, the skin soft, and the pulse relieved, and expectoration was established. The patient passed a thickened urine, his strength was restored, and after having taken twelve doses of this remedy he was out of danger, and was perfectly restored after four weeks use of tonics.

III.

A boy aged thirteen years having been attacked with a bilio-nervous fever in the month of December, was treated by a surgeon with resolvents, emetics, and cathartics.

On the fifteenth of December, Dr. Conradi found the patient very feeble, with a febrile pulse, dry tongue, and difficult speech, partial deafness, and passing, involuntarily, very fetid liquid stools. Cinchona, valerian, camphor, doconicum and blisters, were alternately employed, but without effect.

On the 23d of December, the prostration of his strength was extreme, the pulse was gone, the hands and feet cold, and he was drowsy.

This case called particularly for the use of phosphorus, and Dr. Conradi having a phial of phos-

phoric ether in his pocket, gave six drops to the patient in a spoonful of water. In a half an hour the good effects of the remedy were observed. The pulse was distinguishable, the extremities became warm, and the patient became re-animated.

The remedy was continued in doses of five drops every two hours and the patient gradually recovered his strength until he was out of danger. The treatment was terminated by cinchona and willow bark. The health of this person was perfectly re-established, but he lost his hair.

HUFELAND.

In two cases of gout, (*arthritis nodosa*) Professor Hufeland has given phosphorus with success. It excited copious diaphoresis and diuresis.

This author mentions the case of a man who had nearly died of poisoning, probably with a water called toffana, and who was saved by phosphorus after a failure of numerous other remedies.

In 1810 the professor employed phosphorus with success in paralysis. We give the details of the case:—

A woman aged forty-eight years, the mother of many children, had been attacked a month previously to her admission into the polyclinic institution of the University of Berlin, with a tertian fever, which had

been neglected. One day at the commencement of a paroxysm, the patient fell on the ground with a loss of sensibility, and recovering her senses in a few hours, found herself in a state of paralysis.

After this time the paroxysms of her fever did not return with the regularity which they had formerly observed; nor did they terminate with precipitation nor by diuresis. Every day the paralysis became worse, and the fever took on the remittent form. On the 26th of April the patient was in the following condition: The pulse was very frequent and small, the skin harsh and dry, the urine pale and without sediment, and the woman complained of excessive thirst.

The paralysis extended itself to all the voluntary functions. Both the superior and the inferior extremities were destitute of sensibility and motion. The excretions passed involuntarily. Deglutition, the motions of the tongue and respiration were performed with difficulty and he was affected with blepharoptosis.

The patient was sufficiently sensible to answer, though with difficulty, the questions which were put to her; her digestion was good: she was robust in stature, but not plethoric.

A drink was given her of rad: senaka, valerian, and flor: arnica; anodyne liquor and aq. ammon: to

be taken in doses of two spoonsful every two hours ; frictions with volatile liniment, camphor, and tincture of cantharides were also employed. On the 25th the case remained the same. Several changes were made in the prescription, and on account of the regularity of the evening accessions, bark was given in substance.

On the first of May the patient exhibited great propensity to sleep ; her appetite was impaired, and her lower extremities became affected with atrophy. She was tormented by asthma; under these circumstances phosphorus was given her. Two grains of this substance were dissolved in two and a half drachms of sulphuric ether, twenty-five drops of which were given in some salep, four times a day. Sinapisms were applied to different parts of the body.

The extraordinary effects of this remedy were apparent by the third. Involuntary discharges of pices and urine ceased, and the patient was sensible of increased strength in the superior extremities. She could now raise a spoonful of wine to her mouth. The inferior extremities resisted for a longer time the influence of the remedy. Meanwhile, the sleepiness wore off, perspiration was established, and she became able to walk in her chamber. During her illness the parts about the sacrum became excoriated. To remove the evil arising from this cause, a liniment,

composed of oil of turpentine, camphor, and spirit of caustic ammonia, was successfully employed.

The patient also suffered from costiveness, which gave way to an injection of oil, and an emulsion of oil of poppies and resin of jalap. On the 13th the patient again complained of constipation ; the lower belly was tumified and painful to the touch, principally in the lumbar regions. She felt a disposition to vomit. An aperient elixir was now added to the remedies which had been employed, which opened the bowels. During this time the phosphorus was not neglected, but it appeared proper, under existing circumstances, to give it in the form of emulsion. To this effect, two grains of it were dissolved in three drachms of the oil of poppies, to which was added a proper quantity of gum arabic and oil of fennel, to make an emulsion of four ounces. The dose of this was a spoonful four times a day.

On the 14th, the patient was much better, and spoke freely. In the mean time the asthma and the *decubitus* increased. It was at this time that the patient was neglected by her attendants, and did not receive her medicine regularly.

The disease was stationary for some time ; but again it progressed. Obstinate constipation ensued ; the motion of the extremities was obviously diminished ; her strength failed, the fever continued with a small

pulse, until, finally, the patient expired in a fit of asthma.

The author of this recital observes, with reason, that this was a favourable case for the exhibition of phosphorus, and that the patient might probably have been saved.

Professor Hufeland has communicated, in his journal of medical practice, several observations on the internal use of phosphorus in intermittent fevers.

1.

A man aged thirty four years, of an atrabilarious temperament, and subject to intestinal obstructions, was attacked in 1808 with a tertian fever, which resisted the ordinary febrifuge treatment. At the commencement of the winter of 1810 he entered the Clinical Institute. He was very lean with a debilitated stomach. The paroxysms of fever had been very long and painful, their duration had extended to eighteen hours, his cold stages were not very violent, but were attended by intolerable rheumatic pains, which tormented the patient for two or three hours together. The best cinchona, combined with opium and belladonna, was employed in vain. In the spring they tried the extract of celandine with guayacom. This remedy changed the type of the fever, and converted it into a quartan, which disappeared after the second paroxysm, with the exception of the rheumatic pains.

The medicine excited an appetite. The patient restricted himself to a low regimen, and by the end of the summer the fever returned, three months after it had ceased. It now appeared as a quotidian, attended by rheumatic pains. But it shortly became a tertian. Now the influence of phosphorus was opposed to it. Two grains of this substance were dissolved in two drachms of oil of turpentine. Ten drops of this were taken in a cup full of decoction of mallows, four times a day, and the effect was very remarkable. Immediately the paroxysms ceased to be accompanied by the pains, and their duration was diminished to ten hours. The subsequent paroxysm lasted but six hours, and was the last.

It is remarkable that although the patient had taken but four grains of phosphorus, he had every day two very fetid stools, and his urine was of a brown colour, and deposited a slimy sediment, during fifteen days after the phosphorus had ceased to be used.

II.

A servant, aged thirty-nine years, of a sanguine temperament, and disposed to inflammatory diathesis, suffered for eighteen months with an intermittent fever of the tertian type, originally, but changing almost every month. This fever, after having resisted, during the winter, the regular mode of treatment, gave way

in the spring to the extract of celandine, combined with diffusible stimuli.

Some time after he was seized with pleurisy, which was effectually treated with calomel and blood-letting. In about three months from this time, after a long journey and much travelling in wet weather, his fever returned, and had existed some time previous to his admission into the Clinical Institute. Phosphorus was immediately prescribed for him in the manner above described. The following paroxysm was deferred for three hours, and it lasted only eight hours (previously they had lasted for twenty two); seven grains of phosphorus were sufficient to effect a perfect cure.

GAULTIER CLAUBRY.

We are indebted to Mr. Gaultier Claubry for the greatest number of interesting observations on the use of phosphoric ether in paralysis and dropsy.

I.

A man aged forty years, after a putrid fever, during which he had been many times bled, became excessively enfeebled. The legs, scrotum, and penis, became infiltrated; the urine was suppressed, the belly tense, and the pulse small. Under these circumstances Mr. Gaultier Claubry administered phosphoric ether, in doses of from six to ten drops in a diet drink of armanthus. On the next day the symptoms began

to diminish and on the twelfth day the patient was completely well. He took one hundred and seventeen drops of phosphoric ether.

II.

A woman aged fifty-five, in consequence of putrid fever was afflicted with coldness and swelling of the lower extremities, and great debility. Phosphoric ether was employed as in the preceeding case, and also in the form of frictions on the legs and thighs. The mobility of the legs were restored. She took, during twelve days, one hundred and twenty-eight drops of phosphoric ether, independently of the frictions.

III.

A child, aged three and a half years, was afflicted with a swelling of the right leg and paleness; consequent to putrid fever. Mr. Gaultier Claubry used phosphorus both internally and externally, with antiscorbutic syrup and cinchona, with success.

LENTIN.

Dr. Lentin has successfully employed phosphoric acid, in cases of carious bone, under the idea of affording an abundant supply of the principle necessary to the solidity of the osseous structure, which was impaired by disease. He has also used it in purulent phthisis.

I.

A widow, of sixty, lodged in the chamber with her sister, who had a cancerous ulcer in the face, was attacked a short time after the death of the latter with tumour on the neck; this tumour was cured, but another appeared on the left side of the os frontis. It was ill conditioned, and appearing to suppurate, it was opened by a cutting instrument, when, instead of laudable pus, it discharged a fetid sanies, indicating caries of the bone. Dr. Lentin applied compresses, wet with phosphoric acid, diluted with seven parts of water, to the part affected. These were renewed twice a-day.

In the mean time he gave assafœtida and extract of cicuta. In a few days the ulcers lost their fetid smell, the ichorous discharge was gradually succeeded by healthy suppuration, exfoliation was facilitated, granulation took place, and finally the ulcer cicatrised.

II.

A boy, lately recovered from small pox, had an abscess between the last true and the first false rib; when the abscess was opened a caries was discovered, which emitted an intolerable odour. Phosphoric acid was employed both externally and internally, and in a short time this ulcer, which presented so unpleasant an appearance, was perfectly healed. Five ounces

of the acid were used externally, and three ounces internally.

III.

A soldier, who had suffered for six months with phthisis pulmonalis and hectic fever, became extremely debilitated. Dr. Lentin gave him phosphoric acid, doses of twenty-five drops every three hours; and for ordinary drink, a solution of sugar in milk and water. The patient soon felt the good effects of this treatment. The ulcer lost its disagreeable odour, the fever and the expectoration were moderated, and he soon recovered his strength, so that he walked out daily. But the rubeola returned, and he died.

LUITZELBERGER.

Dr. Luitzelberger has published some interesting observations on the internal use of phosphoric acid in passive or asthenic hemorrhages, particularly in those of the uterus consequent to general debility.

Madame L., a lady of delicate constitution, was brought to bed for the sixteenth time. Her accouchement was easily effected. The placenta shortly followed the fetus, and was accompanied by a considerable flow of blood. The patient was scarcely fixed in bed before an insensible hemorrhage occurred, which very much reduced her strength, and rendered her pale and chilly.

Dr. Luitzelberger found the pulse very feeble and frequent. The uterus had not contracted. He employed successively all the usual remedies, both internal and external, in the form of injections and fomentations. It was not without great difficulty that the hemorrhage was arrested, which continued to flow at intervals; nevertheless, the patient, during six days, complained of nothing but extreme weakness. At this time she experienced a fright which recalled the hemorrhage, in consequence of which her debility was such as to threaten death.

The best remedies were employed without success; the prostration of the vital energies was momentarily becoming more alarming, and it seemed to be impossible to arrest the flow of blood. The patient was pale and chilly, and covered by a cold sweat; the pulse was tremulous and scarcely perceptible; her hearing was dull and her speech indistinct; in a word, she appeared to him the article of death. Under these critical circumstances, Dr. Luitzelberger thought proper to use phosphorus; he prepared it in the form of phosphoric acid, as this compound enters into the composition of our bodies, and because it is also a powerful excitant. Consequently he laid aside all other remedies and prescribed the following formula:

R	Acid: phosphor: pur:	3j	
	Aq: distillat:	3jv	
	Syr: ceras: nig:	3ij	M.

H

The dose was six drops every fifteen minutes. The Doctor, to be enabled to watch every change which might take place, did not leave the bed side of the patient. Immediately after the thirteenth dose he observed that the body became a little warm, and that the cold sweat was diminished.

A quarter of an hour afterwards he gave fifteen drops. Now the patient began to be reanimated, she opened her eyes, her pulse was sensibly relieved, and the surface of her body became gradually more and more warm. The dose was repeated, the symptoms were ameliorated, the hemorrhage was arrested, and the patient enjoyed a refreshing sleep.

During this sleep, which lasted above an hour, she reposed in tranquillity, and her respiration was free. On awaking she turned herself round and exclaimed, "ah, how well I feel!"

The phosphoric acid was continued, twenty drops every hour, and the Doctor had the satisfaction of seeing his patient, whom every body had given up as in a desperate condition, completely restored. He finished his treatment of this case with a decoction of cinchona, combined with phosphoric acid.

HANDEL.

Dr. Handel has spoken of the efficacy of phosphorus in epilepsy. He gives a case of a young lady of six-

teen years of age, of a delicate constitution and irritable disposition. The slightest irregularity excited in her cardialgia and violent cholic, to which epileptic convulsions succeeded. All the usual remedies had been used in vain. One day, when she was sensible of the premonitory symptoms of a paroxysm of her disorder, instead of the peppermint which she had been in the habit of using, she took by mistake some water, in which some phosphorus had been kept by her brother, who used it in his experiments. By this mistake her paroxysm was interrupted.

Hence Dr. Handel supposed that phosphorus was capable of curing this disease. He determined to try it, and therefore prescribed the following formula.

R Phospor: gr. ij
 Solve in ol: hyosciam.
 (A fol. huj plant: c: ol: oliv: infus: par: $\frac{2}{3}$ ss)
 Adm.
 Extract. chamom. e. tot. plant.
 Aq. menth. piper aa $\frac{2}{3}$ ij

D. S.

A spoonful to be taken every two hours. The patient after having taken this prescription for two months, had the satisfaction of seeing herself relieved from a disease which had rendered her life a burden to her.

REMER.

Professor Remer, of Königsberg, has published the history of a case of typhus which was cured by phosphorus.

About the end of the month of April, 1805, a servant, aged twenty-four years, of a robust constitution, having been attacked with an intermittent fever of the tertian form, accompanied by pain in the breast, which he attributed to a violent cold or a fall from a horse, endeavoured in the commencement to combat his disease by the use of animal jelly, according to the plan of Gautier. He employed also opium, camphor, and other stimuli, according to the method of Marcus, but without success; the disease made rapid progress and changed to a double tertian. A physician was consulted, who prescribed cinchona in substance, but immediately the fever changed its type and became continued. The Doctor declared the disease to be a hypochondriac affection, and treated it with tartar emetic, nitre, spirit of nitre, and other remedies, which only seemed to aggravate the disease. During the night of Sept. 17, he was seized with a violent delirium, with convulsions and vomiting of blood.

Under these circumstances the assistance of Professor Remer was required.

At his first visit he found the patient extended on the bed in a low delirium, with a trembling in his hands and knees; the skin was hot to the touch.

He coughed continually, and thought that his breast was affected, the matter expectorated was tinged with blood. His perspiration was free, but urine scanty, and his bowels were costive; he was very unquiet, and his pulse was very frequent, 126 per minute, small and hard.

Professor Remer entertained but little hope, particularly as he suspected that the mind of his patient was affected by a disappointment in love.

He commenced his treatment by prescribing peppermint-water, spirit of ammonia with aniseed, sulphuric ether and common syrup, a spoonful every hour, with lemonade, tea, wine, and soup, etc., as drinks.

But the patient had scarcely began to take these remedies before the vomiting of blood returned with great violence, and blood was also discharged *per anum*. Now, the strength was visibly declining. Professor Remer prescribed a drink of very diluted sulphuric acid, cinnamon water, laudanum and raspberry syrup, to be taken by the spoonful alternately with the preceding. He also rubbed the belly with cologne water, and administered glys-

ters of syrup of sambucus and starch, for the purpose of inviting a diarrhœa.

On the next day, 8th September, twenty-two days from the commencement of the disease, the patient did not vomit much blood, but he rejected the medicines; other symptoms remained as unaltered. The Doctor applied sinapisms to the legs, and rubbed the belly with balsam of Peru, dissolved in alcohol, and gave internally small doses of camphor, sulphuric ether, ammonia, and wine. On the 9th the belly was covered with petechia, and the patient was in a state of stupefaction, with delirium: his stools came away involuntarily, and he vomited up all his medicines.

The interior of the mouth was blackish, the skin hot, with viscous sweats, and the pulse was very frequent, small and feeble.

The sinapisms reddened the skin, but the patient was not sensible of their effect. Professor Remer prescribed a drink of serpentaria, sulphuric ether and camphor, with syrup, to be alternated with another of aq. ammonia, laudanum, vinous cinnamon water and syrup of mint. But in vain, these remedies produced no change in the situation of the patient.

On the tenth, the drink containing serpentaria was changed for one composed of musk, gum arabic, essence of peppermint, sulphuric ether and syrup of almonds. That containing ammonia was continued,

that the patient might be able to retain his medicines.

On the eleventh the patient was nearly dead—the eyes were dull, the lower jaw paralyzed, the extremities cold and trembling, the stools bloody and involuntary, the respiration stertorus, the face hippocratic, and petechiæ numerous. The patient exhaled a cadaverous odour, and sunk down in his bed. The physician gave up every hope, and it was only through the reiterated solicitations of the attendants that he was prevented from abandoning the sick man to his fate. He determined to make a trial of phosphorus, although he predicted that the patient would die during evening.

The following is the formula employed on this occasion:

℞ Pulv. Phosphor: gr. viij.
Gum-Arab.
Ol. Papav.
Aq. Cinnam. Vin.
Syr. Amygd. a a ʒj—M.

One spoonful to be taken every hour.* This remedy changed the scene. Immediately after the first doses that the patient was able to swallow, the activity of all his functions was augmented. His stools

* This dose appears to me to be too strong—I confess that I would never have had the boldness to prescribe it. If unfortunate accidents do not always happen, they are the less to be dreaded, as has been well remarked by Professor Lauth in the conclusion of his memoir.

ceased to be involuntary, his muscular powers were increased, his extremities became warm and his face animated.

On the twelfth his delirium returned, which was regarded as a good symptom. The phosphorus was continued in the same manner.

On the thirteenth he recovered his senses; he recognised his physician and made an effort to salute him. He wished to speak to him, but his delirium prevented him.

The dangerous symptoms disappeared in three days—from the fourteenth to the sixteenth. The patient had by this time consumed forty grains of phosphorus. His loss of strength was, however, considerable. The Doctor attempted to remedy this by bitter tinctures, but they caused vomiting, so that he was obliged to have immediate recourse to the phosphorus, by which, with the assistance of wine and animal food, his health was finally established, in a short time.

His feet were very much swelled, but this inconvenience was removed by a bandage.

LÆBENSTEIN-LÆBEL.

No one, in modern times, has made more profound and accurate researches on the curative effects of phosphorus, than professor Læbenstein-Læbel, professor of

medicine, at Jena. This philosopher spared no trouble to arrive at a certain result. He furnished indigent patients gratuitously with the medicines which they required, and carefully observed the state of the atmosphere and every other circumstance which could have an influence on the career of disease. His experiments serve as models for future experiments, and they are distinguished by their uncommon ingenuity and precision.

I have chosen three of them for the present collection. The first was made in a case of gutta serena, the second in mania, and the third in chronic cephalalgia; all of which cases gave way to phosphorus. Dr. Lœbenstein-Lœbel was himself the subject of the third case.

I.

Case of Gutta Serena, cured by Phosphorus.

John K. aged nineteen years, an assistant to the master of a school, in a village near Naumbourg, in Saxony, and had always enjoyed good health, was attacked with a violent head-ache in consequence of being very much heated and fatigued by work, in the harvest of 1805.

The pain was seated in the front part of the head and about the eyes, which latter were red and inflamed. The patient was, meanwhile, not prevented from attending to his business. He used during several

weeks, a number of remedies, which had been recommended to him, but without any advantage—he at last applied to a man who had excited much wonder by his sympathetic cures

This charlatan purged him violently, and gave him repeated emetics. He advised him, also, to dissolve cow-dung in his urine and wash his eyes therewith—which he did with scrupulous attention to his instructions. This lotion for a time eased the pain, but it returned with increased violence, and his eyes became so morbidly sensible to the light, that he was obliged to confine himself in a corner of his chamber, with his hat drawn over his eyes. Under these circumstances he was recommended to a curate, who, under the appearance of christian charity, undertook to cure diseases of the eye; but he acquitted himself like a Turk. This man, after having examined the patient, gave him an ointment for his eyes, which, however, proved no more successful than the former prescription. His eyes itched exceedingly, and poured out an acrid humour, and the lids were agglutinated during the night.

Such was his situation in the month of October, 1806, when the French, after the battle of Jena, entered Saxony. At this time he was under the necessity of passing eight days in a forest, almost naked, and with very little to eat.

Cold, humidity, fear and inquietude, loss of sleep, and many causes, conspired to aggravate the disease of his eyes, and to affect his system generally. The pain became intolerable, and a diarrhœa and hectic fever ensued. He remained in this deplorable state until the 10th November, when he was conducted by his father, an old man of seventy-seven, to Dr. Lœbenstein-Lœbel. The unhappy father said to the Doctor, with tears in his eyes, that he would perish with extreme misery, if the sight of his son was not restored.

The Doctor, after having examined the patient, found the tarsus tumified, red and painful; the cilia were almost destroyed by suppuration, the conjunctiva was covered with ulcerations and it was difficult to define the cornea. The eye resembled a mass of red flesh, containing white spots; neither the pupil or the iris could be seen. The patient complained of a burning sensation in the eyes. He could distinguish no object. He could barely distinguish between day and night. The acrid humour which flowed from his eyes had excoriated his cheeks.

He was very weak; his pulse was small and chattered, his voice tremulous, and he had no appetite.

Such were the symptoms presented by this patient, indicating not only local affection of the eyes, but also a general affection of the system.

The Doctor prescribed a restorative diet and a decoction of orange-peel for a drink. He prescribed

him also a decoction of columbo with cinnamon water, laudanum and wormwood syrup, of which a spoonful was taken every two hours.

He used also frictions of the belly with spirit of lavender, of mint, tincture of mace, and laudanum.

To check the ophthalmia and to remove the fungous ulcers of the cornea, he used an ointment composed of fresh butter, red precipitate of mercury, camphor, and extract of cinchona. The patient rubbed his eyes gently with this, every morning and evening. The excoriations of the cheeks were washed and dressed with a concentrated decoction of burdock. Finally the patient was obliged to avoid the use of cheese, salt meat, brandy, beer, etc.

By the thirteenth Nov. he found himself much better. His colour was more animated, the excoriations of his cheeks were cured, and the pain of his eyes had ceased. The lids and tarsi were less inflamed, and the ulcers on the sclerotica and cornea, were, for the greater part, removed. The discharge from the eyes was much diminished, and the fever and diarrhœa had ceased; some appetite was manifested, but the sight was not yet restored.

The same remedies were continued until the nineteenth, when he was completely recovered of all internal affection. His disease now was simply an affection of the eyes, which, however, was considerably

ameliorated; for the inflammation was diminished considerably, and the small ulcers had almost entirely disappeared, and it was possible to distinguish the cornea from the albuginea. The pupil and iris appeared to emerge from a thick cloud; but the cornea remained turbid, and the patient was not able to see a lighted candle which was held before his eyes in a dark chamber.

His physician continued the use of the ointment above mentioned, and prescribed a decoction of cascarrilla with cinnamon-water, tincture of orange-peel, and aromatic tincture—a spoonful every three hours. He also had the belly rubbed morning and evening with compound spirit of lavender.

The state of the patient improved daily, so that by the ninth of December, the inflammation was removed from his eyes. The iris and the pupil were now easily distinguished, the albuginea was unspotted, and of the whiteness of alabaster, and the cornea had recovered its transparency. The patient presented a handsome pair of blue eyes, with deep black pupils, which were round and dilated.

Upon touching the eye, the iris did not contract, and the patient could see no better than at first: hence the existence of gutta serena was suspected, produced, without doubt, by extreme debility, or by a paralysis of the optic nerve.

After this the Doctor prescribed a concentrated infusion of valerian with sulphuric ether, in doses of two spoonsful every three hours. He rubbed the eyelids, cheeks, nose, and forehead, with spirit of mint, the tincture of cantharides, and Hoffman's liquor. But the gutta serena still continued. In the months of January and February, 1807, took the valerian in substance, in combination with camphor, and used frictions with caustic spirit of ammonia, oil of mint, essence of mint, and tincture of cantharides. No change in his state was observable at the end of February.

The patient then used a concentrated decoction of cinchona, with aromatic tincture, and exteriorly, ammoniacal vapour, as recommended by Richter and Scarpa. He took the carburet of iron, with canella in substance, and the pills of Richter, composed of galbanum, sagapenum, soap, rhubarb, tartar emetic, liquorice, and other remedies which the Doctor had prescribed for him, but without success.

Disgusted with medicine, the patient resolved to take no more, and it was not without great difficulty that he was prevailed upon by his physician to try a remedy which he had not yet used. This remedy was phosphorus, and it was prescribed according to the following formula:

℞ Phosphor. Urin. gr. iij.
 Solve in naphth, Vitriol. ℥ss.
 Adde. ol. Valer. distill. ℥ss. M. D. S.

Twenty-five drops to be taken every three hours, during the first three days, the dose to be gradually augmented every three days, until it shall amount to sixty drops.

The patient also bathed in tepid water every other day, and observed a proper regimen. He had used these remedies but twelve days, when he was capable of distinguishing day from night—but he could not yet distinguish objects.

He continued the use of the phosphorus and the bath, and he soon felt a tickling or itching sensation in the eyes and eyelids, which was unaccompanied by pain.

One day he exceeded the prescription of his physician and took seventy or seventy-five drops every three hours. But this augmented dose, so far from being injurious, produced the happiest effects upon the eyes, insomuch, that from this time he was able to distinguish objects, which had hitherto been to him obscure. He was not yet able to distinguish colours; in applying gentle friction, the pupil was observed to contract. The joy, induced by the hope of immediate restoration of sight, made a very favourable impression on the nervous system, and contributed in no small degree

to his cure. The phosphoric solution was continued, but the patient took only sixty-five drops three times a-day.

He continued, likewise, the frictions and the bath. In about twelve days he made a visit, alone, to his physician. His vision was restored, but objects appeared to him unnaturally large. His Physician recommended him to walk frequently under the green shade to strengthen his eyes. The use of phosphorus was relinquished, and his treatment was finished by the use of tonics. By the month of May he was perfectly cured.

This remarkable case, reflected great credit on the intelligence and benevolence of the physician who directed the plan of its treatment; it subjected him to much sacrifice of patience, but he felt himself rewarded by the pleasure of having restored to an unhappy sufferer, the use of an important organ; especially as the most eminent physicians of the vicinity had considered this as an inveterate case, beyond the reach of medicine.

II.

Case of Mania, cured by Phosphorus.

The wife of a tanner, aged forty-five years, of a weakly habit, the mother of four children, and who had always enjoyed good health, after having lost a law-suit against her brother, who had treated her in

in an indignant manner, was so much affected that she wept incessantly and refused to eat; the consolation of sleep also was denied her; she became melancholy and extremely weak. In this state she remained for six months, when all at once, on the 8th of July 1808, she became very gay: she danced about her chamber and ate her food with a good appetite. But this phenomenon lasted only until the next day, when her melancholy returned. On the 12th, without any assignable cause, she became very furious—tore her clothes, and seemed desirous of destroying every one who came near her, and it required the combined efforts of several men to hold her.

At this time Doctor Læbenstein-Lœbel was called to her. He succeeded in calming her, so that he could examine her case. He found her face pale, her eyes dull, and her lips pale: the tongue, which she frequently protruded out of her mouth, was covered by a whitish scurf; the pulse was very small and frequent; she was very restless, and trembled much; she complained of lassitude, and a violent pain in the head—she would neither eat nor drink. During the examination, she relapsed into her furious state, from which it was impossible to relieve her.

In reflecting upon the circumstances which preceded

ed this attack, and taking into consideration the poor nourishment, mental depression, and other causes of debility to which the patient had been exposed, Dr. Lœbenstein-Lœbel, instead of commencing his treatment of the case by blood-letting, purging and vomiting, or harsh treatment, he endeavoured to tranquillize the patient by mild persuasive measures, and at the same time he used exciting medicines. He employed an infusion of arnica with sulphuric ether, in doses of a spoonful, alternated with powders of camphor and sugar; in addition to which he had the head rubbed with aromatic tinctures, &c.

From the 13th to the 15th there was no change in the disease. The same remedies were continued without alteration, except that the quantity of camphor was augmented, which caused the patient to sleep several hours during the night. Nevertheless, when she awoke her fury returned. She took no other nourishment than biscuit soaked in wine and chamomile tea. Notwithstanding the heat of the season she complained of being cold, and her extremities had lost their natural temperature; she was in the same state on the 20th, her pulse being very small and her fury extreme. Sinapisms were applied to the legs to divert the determination from the head—her hair was removed for the convenience of

frequent application of anodyne liquor to the head. Dr. L. L. at this time prescribed a potion composed of four ounces of decoction of black hellebore, a drachm of tincture of valerian, and an ounce of sirup of orange-peel, to be taken by the spoonful in alternation with camphor and sugar in powder, of which the dose was six grains. These remedies had a good effect, and seemed to correct her mental alienation, for by the 23d she was tranquil and rational. She slept more frequently and for a longer time than she had heretofore—the paroxysms of her disorder were less frequent and less severe than formerly, the head-ache had ceased, and the pulse was somewhat better: she regained her appetite, and she drank a little wine. She became better and better every day until the 27th, when she had another and an aggravated attack of her disorder. Her pulse was extremely frequent and small, and the tongue white; she took neither food nor medicine. She tore her clothes, scratched her cheeks, and bit her lips. The doctor in vain attempted to calm her. On the 28th her situation remained the same—as it was impossible to give her medicine, the doctor put her into a tepid bath and poured ether on her head, and repeated this operation three times a day. This method was attended by temporary success, but the patient was very much exhausted, and

trembled with weakness; meanwhile she would not take any thing, believing that every thing which was offered to her was poison. At last she took some water and wine, which she drank with pleasure, also some veal broth; but the paroxysms of madness returned daily.

On the 6th of August the doctor visited her as the paroxysm was going off: she was composed but very weak, and complained of pains in the limbs. She was persuaded to take medicine, and three grains of phosphorus dissolved in a half an ounce of ether and half a scruple of oil of gilliflower was prescribed in the dose of from 20 to 30 drops every two hours, with sugar. She continued the baths and the ether.

From the 7th to the 10th no change took place—the dose was now augmented to four grains of phosphorus to the half ounce of ether and oil, and the patient took 30 drops every three hours.

On the 11th she was more gay than ordinary; the pulse was improved; she had perspired during the preceding night; her urine was yellow and deposited a white sediment; her cramp had ceased, and the paroxysms of fury had diminished greatly in their intensity; the dose was augmented to 35 drops.

On the 13th she took 40 drops.

From the 14th to the 16th there was no change, the

paroxysms of fury continued; the pulse was 61 per minute. During the intervals of her paroxysms, she was very weak and timid.

On the 17th she perspired freely, and her perspiration had an odour resembling garlic and sulphur. The pulse was 68. She took 50 drops of phosphoric ether.

On the 18th the patient felt quite comfortable, and had no paroxysm. Likewise on the 19th, when she ate with a good appetite. Her pulse was now 72, her head unaffected; but about four P. M. her fury returned and lasted for ten hours.

On the 20th she took 70 drops.

On the 21st she was relieved, and she spoke rationally; she felt quite strong. Her urine deposited a red sediment, and gave out a strong odour resembling sulphur and garlic. The pulse was 72.

At 1 P. M. she had a paroxysm of fury which, however, lasted only an hour, and she did not complain of the lassitude which was consequent to her former paroxysms.

On the 22d and 23d, the phosphoric ether was given in doses of 80 drops. The paroxysms occurred, but their duration was very short.

On the 24th the pulse was 75. The patient was rational, but her memory was affected—she could scarcely

recal the incidents of the past half hour. On the other hand, she had a good appetite, and retained her strength. Still, however, the paroxysms of fury returned. The dose of phosphoric ether was increased to 85 drops, three times a day—at the same time the spirituous frictions of the head were continued, also, the aromatic baths.

On the 25th, the paroxysms ceased, and in their place no other unpleasant symptom was observed, but a slight shivering, which obliged the patient to remain in bed; but lasted only half an hour—the head was unaffected. On the 26th and 27th the patient was quite relieved—she was perfectly rational, and complained only of debility; she ate with a good appetite, and her mind was undisturbed.

The phosphorus was no longer continued—it was succeeded by valerian and sulphuric ether, and an aromatic powder of vanilla, cannella and sugar. The patient walked out twice every day for the benefit of fresh air.

By the 3rd of August she was perfectly restored, and returned to the discharge of her domestic duties, and has not since experienced any return of her disorder.

III.

Case of obstinate Head-ache cured by Phosphorus.

PROFESSOR Læbenstein-Læbel has experienced the good effects of phosphorus on his own person, when he was afflicted with obstinate head-ache. We give the details of this case as they appeared in the Medical Journal of professor Horn.*

In 1805, in consequence of a violent cold, the professor was attacked by gout, of which he recovered in about six weeks, and pursued his ordinary occupation. He continued in the enjoyment of good health for two years, with the exception of a violent head-ache, which frequently afflicted him, and obliged him to confine himself to bed during the whole day. He attributed this affection to a debility of the stomach, want of sleep, and to the use of indigestible food, for his head-ache was often accompanied by vomiting, which temporarily relieved it. But he perceived that it depended on some other cause; for the pain sometimes occurred, when he had not been exposed to any excess. It was not confined to one place, but changed its location with every paroxysm: sometimes it was in the frontal region, and

* Horn—*Archiv. fur. Med. Erfahr.* 1811. II. Band. p. 399.

sometimes in the occipital. The part was ordinarily tumified, and very sensitive to the slightest touch. The left eye became sympathetically affected, and unable to distinguish objects, but it was not inflamed; the pupil contracted when the cornea was touched. Doctor Lœbenstein-Lœbel now attributed his sufferings to gouty cephalalgia—consequently, he applied spirituous frictions to the head, and he took, interiorly, an infusion of *calamus aromaticus*, with tinctures of *guacum* and *opium*.

He observed a proper regimen, and avoided all mental excitation, and used frequently a tepid bath: nevertheless, the cephalalgia continued. He consulted several distinguished physicians, who recommended various remedies, of which he made trial. His head-ache sometimes left him for ten or fifteen days, but it failed not to return with augmented violence. The disease gradually increased, its paroxysms returned at shorter intervals, and the period of their duration was protracted, until, finally, they returned every second day. They were accompanied by oppression and lassitude of the limbs. The patient was peevish and melancholy—the pulse was slow and small, only 45 per minute. The urine was pale and limpid, and of a disagreeable odour. All appetite for food which existed during the

intervals, entirely ceased on the day of the paroxysm, when the patient acquired even a disgust for food—he was unquiet and fearful, and perspired much.

The most appropriate remedies having produced no change in his state, the doctor at last resolved to try phosphorus. He dissolved four grains of this substance in half an ounce of sulphuric ether, to which he added half a scruple of the distilled oil of gilliflowers—of this he took from twenty to twenty-five drops every two hours. Immediately after the third dose, he was sensible of an agreeable warmth throughout his whole system, and he passed urine more frequently than common; his pulse was relieved, and his melancholy gave place to gaiety and exhilaration. His pain was relieved, and a sweat commenced on the head, which soon became general.

He passed a good night, and the next morning when he arose, he felt extremely well. His head was perfectly relieved—the pain and lassitude had disappeared, and the appetite returned. He continued to take 25 drops of phosphoric ether with sugar, every 3 hours, and his health was perfectly re-established.

About six weeks after this, the doctor was called into the country to attend a case of difficult parturition. It was on the 16th of January, 1805—a west wind had

for some time past prevailed, and the weather had been very wet, but on this day the wind changed to the eastward, and in about three hours it became intensely cold. This exposure had a bad effect on the doctor.—He returned home with a violent chill, pains, and lassitude, and his former head-ache returned.

He immediately took 30 drops of phosphoric ether on a little sugar; no sooner was he sensible of the warmth produced by this, than his head-ache ceased. He repeated the dose in about 2 hours, and soon after he fell asleep and rested tranquilly from 3 to 8 P. M. at which time his head-ache was entirely dissipated—he perspired copiously, and felt a good appetite. Fifteen minutes afterwards he urinated, and his urine was red and clear, and exhaled a sulphurous odour, and in about two hours it deposited a white mucous sediment. He took 25 drops more of phosphoric ether. On the night of the 16th he was tranquil, and on the 17th he found himself free from all complaint. He continued, however, to take 25 drops of the remedy every 2 hours until the 29th, during which time he had no return of his complaint, and he terminated his treatment by a decoction of cinchona and anodyne liquor. On the first of February he went out to see his patients, and continued to enjoy good health.

OBSERVATIONS OF THE AUTHOR.

IN repeating the experiments of celebrated authors, I am actuated by a desire to convince myself of the truth of those important facts which they have related.

In the following instances, phosphorus has triumphed over diseases which had resisted every other means which had been opposed to them.

I have always employed phosphorus dissolved in ether, without having seen, in any instance, unpleasant symptoms resulting from it. In this form it presents the physician with an invaluable resource, when other remedies have been abandoned as inefficacious.

I am far from wishing to maintain that phosphorus is adequate to the removal of *all* obstinate diseases; but it is particularly applicable to asthenic cases, where moderate excitement is unavailing, and the most intense is required.

FIRST EXPERIMENT.

Nervous Fever cured by the internal use of Phosphoric Ether.

MR. H. of Strasburg, of a tall and robust constitution, after having made several campaigns as drum-major, returned with a furlough to his home. A few days after his return, he was seized with a head-ache, attended by a lassitude, which obliged him to confine himself to bed. He attributed his indisposition to the fatigue of his journey; but as his disease increased, I was called on the fifth day to visit him.

I found him in the following situation—the face was pale, and without expression; the neck and breast were covered with a miliary eruption; the belly was tense; the pulse small, and intermittent; the skin dry and hot. The patient suffered great prostration of strength, and some degree of stupor. He did not answer the questions which were put to him; he spoke in a loud voice, some words which were difficult to be understood. His tongue was dry, and his perspiration profuse, &c.

I prescribed him a potion, containing infusion of valerian, anodyne liquor, and syrup—to be taken by spoonsful every hour, also a vinous drink, and restorative broths. At my second visit, in the evening, the

febrile heat was a little diminished—I was aware that he had passed the whole day in a state of somnambulence, and that he had missed several doses of his medicine. I continued the same treatment, with the addition of blisters to his legs. The next day, I found him much better. The epispastics had acted well, and excited vital energy. He had recovered his rationality, and his tongue was moist. He was disposed to vomit, which induced me to prescribe powders of ipecacuanha and sugar, in repeated doses. Immediately after he had taken the first, he threw up a large quantity of bile, and felt much relieved.

But towards evening, the symptoms of his disease returned; his tongue became dry, and he was delirious: the miliary eruption disappeared. I now added to his medicine one grain of camphor, with sugar, every two hours.

During the night he was very restless, and towards morning he had three stools. On the seventh day, the patient was still in the same state. His belly was tense: I prescribed *serpentaria virginiana*, with the extract of cinchona; anodyne liquor, with the syrup of orange-peel, and frictions to the belly, with volatile liniment, and a glyster of infusion of valerian, Hoffman's anodyne, and extract of cinchona.

These remedies produced a strong, but not a durable excitement. The patient frequently applied his hands to his legs, which convinced me that he was sensible of the irritation of the epispastics. The miliary eruption also re-appeared on his skin—but during the night the scene was changed, and all hope of his recovery was lost. Being called in haste to the patient, I found him in a state of insensibility, his eyes were motionless, and his extremities cold; he was affected with spasmodic fits, and hiccough, which was repeated every two or three minutes. Under these critical circumstances I had recourse to phosphorus, remembering the observations of Conradi, Lœbenstein-Lœbel, and others, above-mentioned. I prescribed every hour 8 or 10 drops of a mixture of phosphoric ether, made by dissolving three grains of phosphorus in a half ounce of ether, with a half a scruple of distilled oil of gilliflowers. The vehicle in which this was given, was sirup. All present were astonished that I gave medicine to a man who was evidently dying; but I persevered in my prescription, and recommended all possible attention to it. At my visit on the next morning, I was agreeably surprised that my patient recognized me, and was able to speak to me.

The parents informed me that he had scarcely taken

the second dose, when the hiccough ceased. After the third dose, a warmth was observed to spread over the body, and was succeeded by a general perspiration, which had a very happy effect. I continued the medicine, giving a dose only every two hours.

On the tenth day the patient was out of danger. He then took tonics for fifteen days, and became perfectly established in health, and in a month afterwards rejoined the army, whence he sent frequent accounts of the continuance of his health.

SECOND EXPERIMENT.

Nervous Fever successfully treated by Phosphorus.

A girl aged nine years, was attacked with symptoms of nervous fever; such as head-ache, alternate chills and flushings, lassitude, &c.

The parents neglected her, supposing that she had only taken cold. They had recourse to quacks, some of whom attempted her cure by means of sympathy, and others by emetics, and drastic cathartics. This treatment only aggravated the disease. I was not called to this case until the eighth day.

At my first visit I found the patient in a state of extreme debility, and delirious. The tongue was dry and

the pulse small and frequent, with subsultus tendinum, &c.

I prescribed valerian, arnica, and angelica—also the alexipharmatic essence of Stahl, camphor, and sirup of orange-peel, and I applied blisters to the legs. In the evening, the patient was a little better—she had a rational interval, and her pulse was somewhat relieved; on the succeeding night she was restless.

The next day I continued the same remedies, but about mid-day, I was informed that the patient was about to die. I came to her in haste, and found her in a state of extreme stupor. Her extremities were cold, she had a hiccough, and spasms. I immediately prescribed phosphoric ether, according to the formula described in the preceding case, in doses of four and five drops every hour, in a little sirup. In about three hours I repeated my visit, and found the pulse of my patient full, her extremities warm, and her rationality restored.

I continued the phosphoric ether until the next morning, in the dose of six drops every two hours—by this time she was out of danger. She took, also, for several days an infusion of valerian, with anodyne liquor; and in about fifteen days, her health was perfectly re-established.

THIRD EXPERIMENT.

Typhus cured by Phosphorus.

A gardener, aged forty-six years, of a strong and robust constitution, the father of four children, after having enjoyed uninterrupted health for a number of years, was taken, one evening after the fatigue of labour, with chills and fevers, lassitude, and head-ache, &c. He passed a restless night, being tormented by thirst, and burning heat.

Being called to him next morning, I found his pulse small and frequent, and his tongue foul. He complained also of head-ache, and uneasiness in the breast, with difficult expectoration. I prescribed him a drink, composed of the pulp of tamarinds, gum-arabic, and antimonial wine, and a blister over the thorax.

On the next morning, I found him somewhat better: the spasmodic constriction of the breast was removed, expectoration was re-established, and he had a disposition to vomit.

I gave him ipecacuanha, which caused him to vomit twice, and eject a large quantity of bile. He felt relieved, and begged me to give him nothing more that day. I was induced to indulge him, as he had no urgent symptom, that called for particular attention. On the third day, the above described prescription was repeat-

ed. On the fourth day, after having spent a bad night, and coughed much, I found him very feeble, with a small and frequent pulse; his urine was pale, and he spoke sometimes irrationally. I applied blisters to his legs, and prescribed a drink, containing cinchona, valerian, arnica, and sulphuric ether.

These remedies excited the energies of his system, and produced a determination to the surface, and they were continued on the fifth day; on the sixth day there was no important change, and I was contented to give him a simple infusion of valerian, with some anodyne liquor—on the seventh day, all the symptoms of debility were manifest. The patient, after having spent a night in a state of delirium, became composed towards morning, but it was the calmness of stupor. His tongue was dry, and covered by a thick, blackish crust, which extended also to the teeth. The pulse was frequent and intermittent, and the extremities cold.

Sensible of the good effect of phosphorus in similar cases, I resolved to give it a trial on the present occasion. I gave, every hour, twelve drops of phosphoric ether, in a little syrup. The patient had taken but a few doses, when the pulse was relieved, and became full, the extremities recovered their natural temperature, a diaphoresis appeared, and rationality was restored. The same remedy was continued through the next day,

except that the patient took his dose every two hours, instead of hourly, as before. He passed this day much urine, which deposited a copious sediment.

On the ninth day he was out of danger: he passed a good night, and complained of nothing but weakness, which was removed by cinchona, arnica, valerian, and sulphuric ether, assisted by wine and generous nourishment. On the fifteenth day, he was pronounced to be perfectly well.

FOURTH EXPERIMENT.

Irregular Peripneumonitis cured by Phosphoric Ether.

A married woman, aged thirty years, the mother of three children, and whose breast was naturally weak, after an imprudent exposure to cold and fatigue, was taken with a violent inflammation of the lungs. I was called to this patient, and found her in bed. Her breast was constricted, and she complained of a pain in the left side, under the false ribs, which was augmented in severity in the act of inspiration. She had, also, headache and lassitude, febrile heat, and loss of appetite. I commenced the treatment of this case with an anodyne and diaphoretic dose, elder water and laudanum, spirits of mindereri, and sirup of diacodium, to be taken by the spoonful every hour in tea of linder flowers. I also

prescribed embrocations of volatile liniment and camphor to the breast.

These remedies reduced the violence of the symptoms, but the disease still progressed.* On the evening of the next day, I found the patient in a state of stupor, with an arid tongue and a dry and hot skin; the pain in the side still continued to be very severe. I prescribed an infusion of valerian, with camphor, anodyne liquor, and sirup of orange peel—a spoonful every hour, also a sinapism to the affected side.

On the third day, in the morning, I found that she had spent a bad night; talking incoherently; she was, indeed, quite delirious, and her pulse was full and frequent; she had had a number of involuntary stools. I continued the medicine, and applied sinapisms to the legs. The patient was somewhat relieved at night, but at 3 o'clock in the morning, her symptoms threatened approaching dissolution. She swallowed with difficulty, and was troubled with hiccough and cold sweats. I now no longer hesitated to make use of phosphoric ether: the patient took eight drops in sirup, every half hour. Visiting her in three hours after, I found her perfectly rational; her tongue was moist, her extremities warm, and she was in a general perspiration.

I continued this remedy during the day, giving a dose every two hours.

FIFTH EXPERIMENT.

Tertian Intermittent, cured by Phosphorus.

A gardener, aged thirty-two years, of a strong constitution, and who had never been sick, was attacked with a tertian fever, for which he had undergone a course of medical treatment without advantage.

Weakened by his disease, and the drugs which he had taken, he applied to me for relief. I commenced his treatment with cinchona, combined with cremor tart. and pulv. cargophill; I used also opium, oil of cinnamon, and arsenic, but the disease obstinately resisted all these remedies; therefore I resolved to try the virtue of phosphorus in this case. To this effect I dissolved three grains in a half ounce of sulphuric ether, of which, I gave ten drops on a piece of sugar, every two hours during the apyrexia. The paroxysms, which were wont to continue three or four hours, were now shortened to one hour. This remedy was continued every day of interval, and the paroxysms were regularly deprived of their violence; finally, in eight days they entirely disappeared, and the patient was perfectly restored after using a decoction of cinchona.

SIXTH EXPERIMENT.

Periodical Head-ache cured by Phosphorus.

A woman, aged twenty-eight years, of a nervous, irritable system, was subject to a violent head-ache, which made its attack almost every ten days. The pain was seated, principally, over the orbits of the eyes, and obliged the patient to keep her bed, which drew upon her the reproaches of her husband, who could not satisfy himself respecting her disease. After having used many remedies to no effect, she honored me with her confidence. I prescribed valerian, extract of milfoil and laudanum, a spoonful every two hours. This remedy was taken during the paroxysm, which it shortened, but did not prevent it from again returning after its usual period.

I then had recourse to tincture of digitalis, combined with laudanum, of which I gave twenty drops three times a day, with an aromatic tea of peppermint, milfoil and valerian.

The patient was somewhat relieved by this treatment, but the head-ache still observed its regular period of attack—I next used an electuary, recommended by Grant, for hysterical head-aches, also friction of sal ammoniac and ether, succinized liquor of ammonia, &c. but without success. I then read the excellent memoir

of Lœbenstein-Lœbel, respecting phosphorus in cases analogous to the present, and I immediately resolved to prescribe this substance. I therefore dissolved four grains of phosphorus, in half an ounce of sulphuric ether to which I added ten drops of oil of gilliflowers. I gave twenty five drops of this to the patient, on a piece of sugar, just as the paroxysm commenced, to be repeated in two hours.

In about half an hour after the first dose, the paroxysm was sensibly diminished in violence, and lasted only three quarters of an hour. The next day she was quite well, and in a good humour. I discontinued the remedy until the accession of the next paroxysm, which was treated in the same manner as the last, and with a similar result, only that it was removed in a quarter of an hour. Finally, at its next period, the pain did not appear at all, nor since then has the patient complained of it.

SEVENTH EXPERIMENT.

Cardialgia cured by Phosphorus.

A woman aged thirty years, the mother of two children, had been for several years subject to an obstinate cardialgia, which affected her two or three times every week, with violent pain. She had obtained no relief from all the remedies which she had tried.

She applied to me, and I endeavoured to combat the disease with antispasmodics, and with this view I prescribed a powder composed of valerian, gilliflower, and opium, two or three times a day. For some time this remedy appeared to assuage the pain; but the paroxysms returned as usual. I next tried essence of valerian, and laudanum in doses of twelve drops every two hours. Frictions to the epigastric region, of volatile liniment and laudanum, were also used, but all to no purpose. I tried, in course, all the anodynes, and antispasmodics which I had known to be useful in analogous cases—they were composed of the tinctures of orange peel, milfoil, laudanum, and spirits of nitre, which were given to the patient an hour previous to eating. I interposed, also, quassia, rubarb, and calcined magnesia. But the disease resisted all these remedies. I had nearly lost all hope of success, when I determined on the use of phosphorus—for in desperate cases we must use violent remedies. Consequently, I prescribed a drachm of phosphoric ether, with two drachms of tincture of cinnamon, to be taken in doses of twenty-five drops, three times a day on sugar. This remedy was used on the day of the paroxysm, which was considerably influenced by it. The next day, the patient was free from pain. Nevertheless, I continued the exhibition of the phosphorus, twice a day. The

next paroxysm scarcely appeared—the pain was so slight, as to be easily borne, and did not continue longer than about five minutes.

Encouraged by this success, I induced the patient to continue the use of the remedy, gradually diminishing the dose for several days, and I had the satisfaction, ultimately, to find that I had effected a permanent cure.

EIGHTH EXPERIMENT.

Rheumatic Pains cured by Phosphorus.

A girl of nineteen, of a good constitution, and sanguine temperament, after bathing in the river, was seized with violent pain in the belly. Being called to her, I prescribed an anodyne and diaphoretic dose, with chamomile tea. She passed a good night, and the pain was assuaged; but it returned in the morning, and appeared in the hands, which were swelled, and also in the right foot.

The pain appeared to me to be rheumatic, and I could attribute them to no other cause than suppression of perspiration by the cold bathing; consequently, I made every effort to restore the cutaneous function—I prescribed valerian, guayacum, and tartar emetic, *in*

dosi refracta, and the use of tea of sambucus and arnica.

These remedies produced a little diaphoresis, and ameliorated the pain, which left the right foot, and appeared in the left knee, and the patient could not move her arms without much pain. I tried a variety of remedies, especially those which are considered as anti-rheumatic, such as aconitum, guayacum, Dover's powder, Plumer's powder, antimonials, &c.

I could do nothing with the pain, but merely change its location from one part to another, and after six weeks unprofitable use of other remedies, I resolved to try phosphorus. I therefore dissolved three grains in half an ounce of sulphuric ether, eight drops of which were given in a little sugar, three times a day. After the third dose, the patient felt an agreeable heat in the parts affected—she perspired freely during the night, and on the next morning, found herself considerably relieved.

I continued the remedy in diminished doses. Being obliged to absent myself for two days, I was surprised at my return, to find my patient perfectly recovered, and complaining only of a weakness which soon disappeared under a course of tonics and nourishing diet.

NINTH EXPERIMENT.

Case of Suppression of the Menses, successfully treated by Phosphorus.

A servant, aged twenty-four years, was exposed to violent cold during menstruation—a suppression was the consequence, attended with lassitude and headache.

Being assured that there was no other cause for the suppression, I prescribed an infusion of milfoil, with borax and sirup—a spoonful every hour, and afterwards, pills of extract of hellebore, aloes, saffron, and opium.

These remedies not producing the desired effect, I tried valerian and laudanum, in doses of twenty drops every two hours, and afterwards, elixir vitriol of min-sicht in the dose of fifty drops in a glass of water, four times a day. I employed, also, iron filings, and many other remedies, but without success. Finally, I had recourse to phosphoric ether, of which the patient took fifteen drops every two hours. She had taken this remedy scarcely two days, when her menses reappeared, and continued afterwards to flow at the regular period.

TENTH EXPERIMENT.

Chlorosis cured by Phosphorus.

A villager, aged twenty-three years, had been afflicted with chlorosis since her sixteenth year. She applied to me for assistance, after having already made use of the remedies which had been prescribed by several other physicians and surgeons without effect.

I attributed the disease to a deficient irritability, and relaxation of the uterine system. I prescribed pills, composed of assafœtida, gum ammoniac, menianthus, and aloes: also, a ptisan of the roots of madder and calamus, liquorice, &c.

For these pills, I substituted those of Weickard, the good effect of which I had witnessed in cases analogous to the present. They are composed of iron filings, aloes, golden sulphuret of antimony, calomel, ol. sabinæ, and sirup.

Many other remedies were also tried, but without the least degree of success. Finally, phosphoric ether combined with the tincture of cinnamon, produced the happiest result. She took twenty-five drops three times a day. Almost from the very beginning, the good effects

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of this remedy were apparent, and a perfect cure was obtained in the course of ten days, during which time the patient took from fifteen to twenty drops twice each day.

ELEVENTH EXPERIMENT.

Mr. M. resident thirty miles from Philadelphia, had from his youth to his twenty seventh year, practised onanisme, so as to bring on a state of great debility. He consulted me in the year 1819. He was desirous of marrying, but this was forbidden by his debilitated state. He had been in the hands of many physicians and quacks, who had used tonics and stimulants to no effect. Aromatic baths, and frictions to the scrotum, had also been used. I commenced the treatment of his case immediately with phosphorus. I gave him eight drops of the etherial solution, twice a day, with sugar. After using this prescription for fifteen days, he was sensible not only of renovated strength, but also of venereal desire, which, however, I forbid him to indulge, and recommended a continuance of the phosphorus for fifteen days longer. After this time, tonics were substituted during one month. The phosphorus was then resumed, and in about three months, his strength was so far re-

stored, that he married, and is now the father of three children.

A similar case occurred to me in Philadelphia, which was cured by the same means.

TWELFTH EXPERIMENT.

Mrs. L. a young woman of a nervous temperament, living near Philadelphia, consulted me in 1824, on account of a severe head-ache with which she was afflicted, periodically, every fifteen days. She had already tried various remedies, among which were bathing, bleeding, blisters, purgatives, &c. without effect. I gave her six drops of phosphoric ether twice every day. The pain was sensibly relieved, and the duration of the paroxysms shortened by this means, until at last they disappeared altogether, and have not since returned.

THIRTEENTH EXPERIMENT.

Mr. T. a very industrious artist of Philadelphia, consulted me in 1824, on account of an extreme weakness of his eyes, and imperfect vision. I gave him phosphorus in the usual manner, and in five weeks, during which time he took it every day, his eyes were restored to their original strength, and his vision was perfect.

FOURTEENTH EXPERIMENT.

Miss M. a member of a highly respectable family in this city, had been afflicted for a long time by an extreme weakness and trembling of the hands, apparently, from nervous debility. Many remedies had been tried in vain, until her brother-in-law, whose family physician I had the honor of being, consulted me respecting the case. The patient trembled so much, that she was unable to thread a needle, or hold a glass of water without spilling it, which circumstances have been witnessed by many persons in Philadelphia. I gave her phosphorus and in the course of a few months, her strength was restored, so that the trembling was no longer apparent.

After putrid or typhus fever, I have used phosphorus with great advantage, for restoring the strength of those who had severely suffered from this disease.

FIFTEENTH EXPERIMENT.

During my residence in Reading, Pennsylvania, I was called in a great hurry to see a young woman aged about 19 years, who had been to church, in which the crowd was so great as to cause her to faint. A considerable crowd attended her to the house to which she

was carried, and witnessed the effect of the remedy which I prescribed. I found her in a state of absolute insensibility: her pulse could scarcely be felt. I called for a spoonful of cold water, into which I poured three drops of phosphoric ether, and with a great difficulty I succeeded in making her swallow the mixture. In two minutes afterwards, a flame was observed to proceed from her mouth, which caused all present to cry out with astonishment. I observed, humorously, that she had a devil in her; nevertheless, I gave her a second dose; and after a short time she opened her eyes, and exclaimed, ‘Ah! I feel now very well.’ The by-standers were so much surprized, that they verily believed that the Devil had flown out of her mouth.

According to the French proverb, relative to ingenious and intriguing men, “*Il a le Diable au corps,—The Devil is in him,*” this would be an inestimable remedy, if it would prove efficient to all the various kinds of devils that pervert the human mind.

I have added this case only to illustrate the power of phosphorus, in recalling to exertion the almost exhausted powers of life.

CONCLUSION.

It is inferred, from what has been said respecting the medical use of phosphorus,

1, That it is a remedy, capable of producing extraordinary effects in various internal diseases.

2, That it is extremely dangerous to administer it in substance, as in that form it is capable of acting as a caustic, and producing the most violent inflammation, gangrene and death.

3, That we should reject every form of its exhibition, in which it is not completely diffused throughout the vehicle in which it is given; such as pills, bolusses, electuaries, emulsions, conserves, &c. from which it may become disengaged in the stomach.

4, That its solution in sulphuric ether with the addition of a small proportion of aromatic oil, appears to be the best form for its exhibition.

5, That phosphorus exhibited in this form loses its caustic quality, and becomes simply an analeptic and a stimulant.

6, That much caution is necessary in the exhibition of this remedy, and it should therefore be confined to judicious hands.

7, That it should always be given in small doses in the beginning, and its quantity increased, according to circumstances, and its use gradually relinquished.

8, That it is not to be regarded as an universal panacea, capable of curing all inveterate diseases,

9, That it need not be used until ordinary means have been tried.

10, That its good effects are confined to asthenic diseases, chronic agues, in which its action is momentary but very intense.

11, That the diseases in which it has been ~~un~~ successful are, typhus fevers, with extreme prostration of vital energy; and in cases of complicated disorders; in obsti-

nate intermittent fevers, rheumatism, gout, chlorosis and dropsy; and particularly in nervous disorders: such as apoplexy, syncope, paralysis, convulsions, epilepsy, mania, obstinate head-ache, gutta serena, and cardialgia.

12, Finally, phosphorus is found to be useful in cases of loss of blood, with diminution of strength, in marasmus, phthisis, and caries of the bones.

NOMENCLATURE

OF DIFFERENT WORKS PUBLISHED BY THE AUTHOR.

Leçons du Cit. Alphonse le Roy, sur les Pertes de Sang, &c. *Paris*, 1800.
Doctor Zadig, at Bresslau, had it translated into German.

Recherches et Observations sur le Phosphore. *Strasbourg* 1815.

* * A Review of this work, very flattering to the author, is inserted in the Medical Repository, vol. III. p. 205. *New York*, 1815; in the Eclectic Repository, and Analytical Review, vol. VIII. p. 125. *Philadelphia*.

Traité sur les Vins dans les maladies dangereuses et mortelles, et sur la falsification de cette boisson, par le Professeur *Læbenstein-Læbel*. Translated from the German into French, by the Author. *Strasbourg*, 1818.

Tableau de la Sémiologie de l'Œil, à l'usage des Médecins, par le Professeur *Læbenstein-Læbel*. Translated from the German into French, by the Author. *Strasbourg*, 1818.

A general Guide for Practising Physicians in the Examination of the Sick, with an Appendix of Medical Formulæ. *Philadelphia*, 1823.

Researches and Observations on the Use of Phosphorus, in the Treatment of various Diseases. *Philadelphia*, 1825.

THE AUTHOR INTENDS TO PUBLISH THE FOLLOWING WORKS:

Topography of the City of Philadelphia; with Observations on the Civil, Commercial, and Literary Character of the *United States*.

The present State of Medicine in North America, the Diseases produced by the Climate, and the Cause of the frequent occurrence of *Gravel*, with an account of the good success the Author has had in relieving many such Patients.

A Treatise on Dysentery, and the principal predisposing Cause of this Disease, as it prevailed in the months of *July* and *August*, in the year 1822; in the several *Towns and Counties in Pennsylvania*; to which is annexed, a Treatise on the general mode of treatment of the practitioners of those places, and the Author's own plan of treatment.

Researches and Observations on Leprosy.

A V I S .

Comme l'Auteur de cet Ouvrage est, bientôt, dans l'intention de publier, en Français, sa *Topographie de Philadelphie*, en 2 vols. octavo, il a le plaisir de référer ses Lecteurs à la Table ci-jointe, des matières qu'elle contient.

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Des Moulins patentés pour l'Ecorce de chêne.

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De la protection accordée aux gens de métiers.

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- Des différentes Sociétés de Médecine et d'autres sociétés savantes des E. U.
- De la Société Savante connue sous le nom de *Philosophical Society*.
- Des Dentistes de Philadelphie.
- Des Saigneurs et des Barbiers de Philadelphie.
- Des Sages-Femmes, des Nourrices et des Gardes malades.
- Des maladies régnantes aux E. U., ainsi qu'à Philadelphie et dans l'Etat de Pennsylvanie.
- Du traitement des Médecins Américains, et de leurs remèdes favoris.
- Des Sociétés d'Assurance de Pennsylvanie.
- De L'Union.
- Delaware.
- Marine.
- Lancaster et Susquehanna.
- Sociétés d'assurance contre le feu et de longue vitæ de Philadelphie.
- De la Société d'Assurance dite (*Mutual Fire Insurance Company*.)

Le la Société d'Assurance Américaine contre le feu, (*de Londres et du Phoenix.*)

Des Etablissements contre le feu à Philadelphie.

Un mot sur l'ineurie de l'Américain à l'égard du chauffage.

Des maîtres Ramoneurs et de leurs aides.

Des Manufactures de Philadelphie.

Des Brasseries, distilleries, et des raffineries de sucre, noms des principaux propriétaires.

De la Presse, de la littérature, de leurs progrès et de leur état actuel, à Philadelphie, avec la liste des gazettes qui s'y impriment tous les jours et des noms de leurs Editeurs.

Noms des principales Imprimeries de Philadelphie.

Des Journaux Américains et étrangers qui sont lus dans l'Athénée de Philadelphie.

Des differens Journaux de Médecine dans les Etats-Unis, les noms des Editeurs.

Divers extraits tirés des papiers publics pour démontrer la grande liberté de la presse de cet pays.

Liste de toutes les gazettes allemandes qui paraissent toutes les semaines, dans la Pennsylvanie, leurs titres et le nom de leurs Editeurs.

Liste des principales Maisons de commerce, Américains, Françaises et Allemandes, de Philadelphie et dans l'Etat de Pennsylvanie.

Liste des principaux Pensionats de Philadelphie pour l'instruction des deux sexes.

De l'Importation et de l'Exportation des marchandises des E. U.

Noms des Vaisseaux de guerre Américains, la date à laquelle ils ont été construits, leur port et leurs canons.

Liste de tous les Bâtimens qui ont débarqués des passagers dans le Port de Philadelphie depuis 1800 jusqu'en 1822, la date de leur arrivée, lieu de leur débarquement, noms des Capitaines, et nombre des passagers de chaque bâtiment.

De L'Etat et service militaire des Etats-Unis.

De la Milice.

Des Recompendes honorables accordées aux militaires.

De la Séance du Congres, en 1821 concernant la reduction des troupes.

De la Fête du 4 Juillet en Amérique.

De la Loi contre les débiteurs.

Des Prisons et des hopitaux de Philadelphie.

De L'acte de Naturalisation en Amérique.

Reflexions sur l'état actuel des Etats-Unis.

Miscellanées.

